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CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

Highlights

of this issue's
266 articles

**Describing developments in
processes, techniques, mate-
rials, equipment**

**Products from Abundant Perlite
May Conserve Materials Now
on Critical List 22**

**Instrumentation of Continuous
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ticle Where Conventional Types
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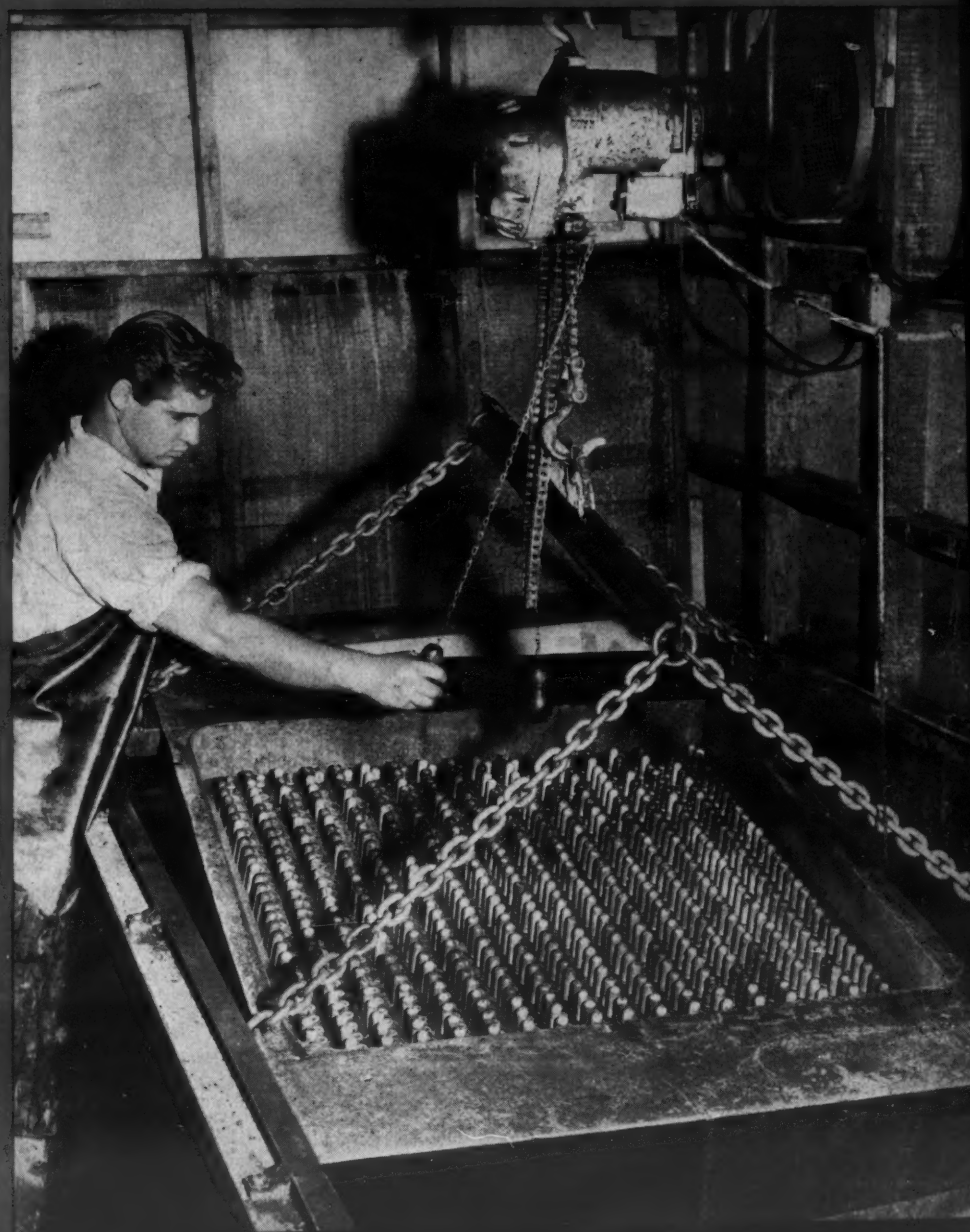
**Alloy Couplings Can Be Used
with Special Joint for Glass
Lined Pipe 119**

The Cover Picture

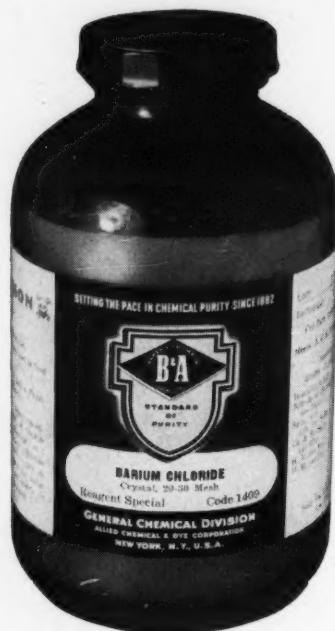
Mattress cavity being low-
ered into one of three
tanks of foam rubber mold
cleaning line. Operation
assures clean product al-
ways Page 8

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SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

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"That's Interesting"

Insecticides tough on spray pumps

Insecticidal sprays such as DDT not only decimate insects but often shorten life of pumps in spray equipment. In many cases the solutions are not only the cause of corrosive problems but they also carry entrained solids and slurries such as lime and talc, which are highly abrasive.

Comparative tests have shown the superiority of Ni-Resist alloy over "85-5-5" bronze in handling an erosive slurry under an exaggerated test. A line of spray pumps using this nickel alloy is made by Hypro Engineering Inc., Minneapolis, Minn. (International Nickel Co., Inc., New York 5, N. Y.)

House delicate radar equipment in "Inflatable dome"

A "house" to protect all the delicate radar equipment used to signal approach of enemy aircraft is provided by an inflatable "dome" composed of compounded rubber and fiber glass. Only one pound of pressure in walls is required to maintain it at its maximum expansion of 37' height and 54' diameter. The extreme thinness of walls is essential to permit clear reception of signals. (B. F. Goodrich Co., Akron, Ohio.)

Geiger counters measure X-rays reflected from sheet to test thickness of tin

Combination of Geiger counters and X-rays provide an automatic testing device that will save tons of scarce tin annually — enough to manufacture 1,000,000 tin cans. Instrument measures X-rays reflected from steel sheet to determine thickness of tin coating. Under old method of measurement, 4-inch discs were stamped in nine places on a sample sheet. Sheets that were used in making metallurgical tests became scrap. With the new method, no tin is lost in testing. Machine consists of two X-ray tubes, one mounted above test sheet, the other below. Strength of reflected X-ray beams from the sheet is measured by Geiger counters, and the count is recorded on a paper tape. (Method is a development of United States Steel Corporation scientists and is now being used in company's plants.)

Natural gas from "off-shore" wells carried by aluminum pipeline

Last year, the first "off-shore" aluminum pipeline in the world was installed by Aluminum Company of America in Matagorda Bay near Port Lavaca, Texas. It consists of 3,500 feet of welded aluminum pipe and carries natural gas from underwater wells to a header platform in the bay. Service life is expected to be long, even without coating and wrapping.

Steam engine operates at any speed while governor speed is constant

Governors are the most stable, and exert their greatest corrective force, when operated within a very narrow speed range. Steam engines generally are governed to operate at a constant speed, despite changes in engine load. As load increases and engine attempts to slow down, governor allows more steam to enter, and as the load falls off, governor shuts off some of the steam. However, in a certain mill installation, where an engine operates grinding rolls, it must operate at different speeds. Thus it is necessary to make adjustments to the governor, or to make some arrangements for operating the governor through some variable speed mechanism. Variable speed transmission was installed between governor and engine crankshaft. By adjusting the transmission, the governor is operated at a constant speed, the speed at which it is most effective. (Reeves Pulley Company, Columbus, Indiana.)

Fewer students now aspire to bar, pulpit, or scalp

According to a survey by the Twentieth Century Fund, the traditional college courses of law, medicine, and theology are continually losing in popularity to commerce, education, and engineering.

"That's Interesting"

Certificates of necessity to 396 plants

DPA has issued certificates of necessity to encourage construction of 396 new or expanded defense facilities costing an estimated \$1,310,799,399. These were issued between March 7, when the last periodical compilation was announced, and April 6. Among the plants included are those making chlorine, sulfur, pig and oxide aluminum, benzene, toluene, tungsten powder, ferro-silicon, and other minerals and chemicals.

Simultaneous seeing

"Perpetual Unity", or simultaneous seeing of all things in the field of vision, can be taught by flash exposure methods. This was explained by Prof. Hoyt L. Sherman of Ohio State University before the 43rd annual meeting of the American Institute of Chemical Engineers. Ohio State football players have already utilized this method. A player with a cardboard mask over his face stands on the field, ready to throw. Professor Sherman, holding the other end of a string which is attached to the mask, yells "Red," and pulls the string. The mask rises for an instant, and the ball is on its way through the air. Some twenty yards away, four prospective receivers wearing jerseys of different colors are running at top speed. The one in a red jersey would catch the ball without much effort. Professor Sherman described an extension of this method of "seeing and doing" to many fields at an industrial level. All such activities are in some way dependent on the "seeing and doing sequence."

Silver-clad steel strip

Development of a silver-clad steel strip as a substitute for brass and other restricted metals was recently announced. Strip is described as lending itself to stamping, bending, drawing, spinning, and other metal-working operations. Component parts can be assembled by means of silver brazing or soft soldering.

Waste sulfite liquor used in road building

Waste liquor from pulp machines of a Canadian paper company is now being used to pave roads. Liquor from the machines reportedly contains 10% solids. It is treated in a special evaporation unit to increase the proportion of solids to 50%. This mixture is sprayed on road gravel and allowed to penetrate. It is said to increase bearing strength of the road and give it better surface for carrying asphalt. Weak liquor is also to be used for binder in firebricks, tile, and other ceramics. Spray-dried material is suitable for tanning purposes and for a linoleum base. (U.S.I. Chemical News, U. S. Industrial Chemicals, Inc., New York 17, N. Y.)

(Continued on third cover)

For more information on product at right, specify CP 4842
... see information request blank between pages 2-3.

TABLE No. 1—RESISTIVITIES

TYPICAL SERVICE CONDITIONS			% by Wt.	PH Value	PFAUDLER GLASS LININGS					OTHER MATERIALS												
					42	24	48	27	Nickel	Monel	Inconel	Aluminum	Copper	Durichlor	Hastelloy A, B, C, & D	Karbide No. 2	Haveg	Lead	Rubber	304 Stainless	316 Stainless	347 Stainless
HCl	Hydrochloric Acid	(Conc. 35.0%—28° Be.)	—	R*	R*	NR	NR	NR	NR	NR	NR	NR	NR	R†		R*	R	NR	—	NR	NR	NR
HCl	Hydrochloric Acid	N 3.58%	0.1	R*	R*	NR	NR	R	R	NR	NR	NR	NR	R†		R*	R	NR	R	NR	NR	NR
HCl	Hydrochloric Acid	N/10 0.36%	1.0	R*	R*	NR	NR	R	R	R	NR	NR	NR	R†		R*	R	NR	R	NR	NR	NR
HCl	Hydrochloric Acid	N/100 0.036%	2.0	R*	R*	NR	NR	R	R	R	NR	NR	NR	R†		R*	R	NR	R	NR	NR	NR
H ₂ SO ₄	Sulphuric Acid	(Conc. 77.0%—60° Be.)	0.3	R*	R*	NR	NR	NR	NR	NR	NR	NR	NR	R**		R*	NR	R	—	NR	R	NR
H ₂ SO ₄	Sulphuric Acid	N 4.75%	0.5	R*	R*	NR	NR	R	R	R	NR	R	R**		R*	R	R	R	R	NR	R	NR
H ₂ SO ₄	Sulphuric Acid	N/10 0.40%	1.4	R*	R*	NR	NR	R	R	R	NR	R	R**		R	R	R	R	R	R	R*	R
H ₂ SO ₄	Sulphuric Acid	N/100 0.040%	2.1	R*	R*	NR	NR	R	R	R	NR	R	R**		R	R	R	R	R	R	R*	R
HNO ₃	Nitric Acid	(Conc. 60.0%—40° Be.)	0.33	R*	R*	NR	NR	NR	NR	NR	NR	R	NR	R**		NR	NR	NR	—	R*	R*	R*
HNO ₃	Nitric Acid	N 8.30%	1.0	R*	R*	NR	NR	NR	NR	NR	R	R	NR	R**		NR	NR	NR	—	R*	R*	R*
HNO ₃	Nitric Acid	N/10 .69%	2.0	R*	R*	NR	NR	NR	NR	NR	R	R	NR	R**		NR	NR	NR	—	R*	R*	R*
H ₃ PO ₄	Phosphoric Acid	N 3.30%	2.0	R*	R*	R	NR	R	R*	R	NR	R	R**		R	R	R	R	R	—	—	—
H ₃ PO ₄	Phosphoric Acid	N/10 0.33%	1.5	R*	R*	R	NR	R	R*	R	NR	R	R**		R	R	R	R	—	—	—	—
CH ₃ COOH	Acetic Acid	N 5.06%	2.4	R*	R*	R	NR	R	R	R	R	R	R**		R	R	R	NR	R	R*	R*	R*
CH ₃ COOH	Acetic Acid	N/10 0.50%	2.9	R*	R*	R	R	R	R*	R*	R	R	R**		R*	R	NR	R	R	R*	R*	R*
CH ₃ COOH	Acetic Acid	N/100 0.050%	3.4	R*	R*	R*	R	R*	R*	R*	R	R	R**		R*	R	NR	R	R	R*	R*	R*
C ₆ H ₄ (OH) ₂ (COOH) ₂	Tartaric Acid	N/10 0.78%	2.3	R*	R*	R*	R	R*	R*	R*	NR	R	R**		R*	R	—	—	R*	R*	R*	R*
COOHCH ₂ CH(OH)COOH	Malic Acid	N/10 0.87%	2.3	R*	R*	R*	R	R*	R*	R*	NR	R	R**		—	R	—	—	R*	R*	R*	R*
C ₆ H ₄ (OH)(COOH)H ₂ O	Citric Acid	N/10 0.64%	2.3	R*	R*	R*	R	R*	R*	R*	NR	R	R**		R*	R	—	—	R*	R*	R*	R*
CH ₃ CHOHCOOH	Lactic Acid	N/10 0.90%	2.4	R*	R*	R*	R	R*	R*	R*	NR	R	R**		R*	R	—	—	R*	R*	R*	R*
CrO ₃	Chromic Acid	85.00%	—	R*	—	—	—	NR	NR	—	NR	NR	R***		NR	NR	R	—	NR	NR	NR	NR
NaHCO ₃	Sod. Bicarbonate	N/10 0.84%	8.4	R	R	R	R	R*	R*	R*	NR	NR	R***		—	R	R	—	R*	R*	R	R
Na ₂ CO ₃	Sod. Carbonate	N/10 0.53%	11.6	R	R	R	R	R*	R*	R*	NR	NR	NR		—	R	R	—	R*	R*	R	R
NH ₄ OH	Am. Hydroxide	N/10 0.35%	11.1	R	R	R	R	R	R*	R*	NR	NR	NR		R	R	R	—	R*	R*	R	R
NaOH	Sod. Hydroxide	N/10 0.40%	13.0	NR	NR	NR	NR	R*	R*	R*	NR	NR	NR		—	R	NR	—	R*	R*	R	R
KOH	Pot. Hydroxide	N/10 0.56%	13.0	NR	NR	NR	NR	R*	R*	R*	NR	NR	NR		—	R	NR	—	R*	R*	R	R
Na ₂ PO ₄ ·10H ₂ O	Trisod. Phosphate	N/10 1.47%	12.0	NR	NR	NR	NR	—	—	—	NR	NR	—		—	—	NR	—	—	—	—	—

R — Resistant at Room Temperature.
R* — Resistant at Boiling Point.
R† — Resistant up to boiling point, providing ferric chloride content is low.
R** — Durichlor is recommended in preference to Durichlor.
R*** — Both Durichlor and Durichlor resistant.
NR — Not Resistant.
R†† — 48T Glass, suitable for certain service at elevated temperatures.

These resistivity ratings do not make allowances (except in the case of fluorine where there is no problem) for the possible effect of temperature.

COMPOSITION	Durichlor	Monel	Inconel	Aluminum	Copper	Durichlor	Hastelloy A, B, C, & D	Karbide No. 2	Haveg	Lead	Rubber	304 Stainless	316 Stainless	347 Stainless
60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%	60% to 70% 1% to 5% 0.5% to 0.7% 0.5% to 1.5% 0.5 to 0.8%

R* — Resistant at Room Temperature.
R** — Resistant at Boiling Point.
R† — Resistant up to boiling point, providing ferric chloride oxidant is low.
R*** — Durion is recommended in preference to Durichlor.
† — Not Resistant.
R†† — RT Glass suitable for certain service at elevated temperatures.
R††† — These resistivity ratings do not make allowance (except in the case of Pfaudler glass where it is no problem) for the possible effects of turbulence and service which may lead down productivity, corrosion-product layers or otherwise accelerate corrosion; nor for the effect of impurities or corrosive additions. However, the rating on lead for phosphoric acid assumes commercial quality phosphoric acid; C.F. phosphoric acid is not.

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Pfaudler standard "E" series glass-lined steel reactors handle pressures up to 25 psi. internal, coincident with 90 psi. jacket; sizes range from 5 to 2000 gallons.

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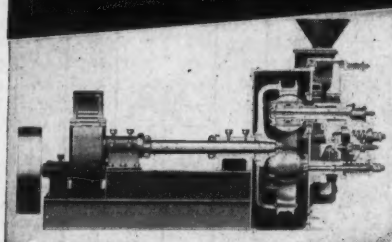
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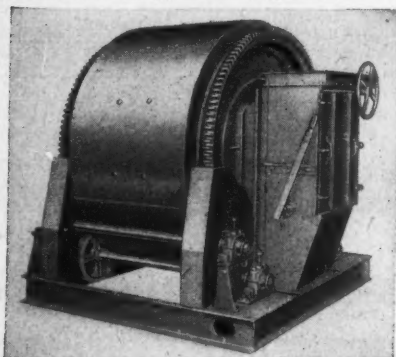
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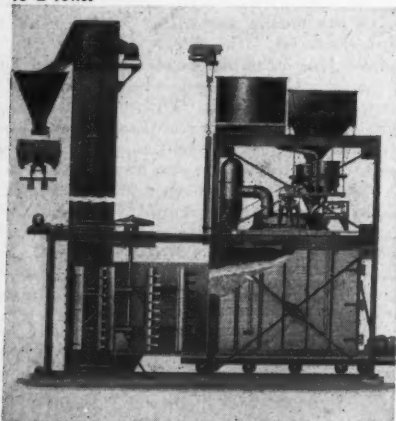
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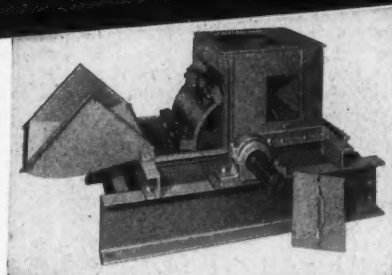
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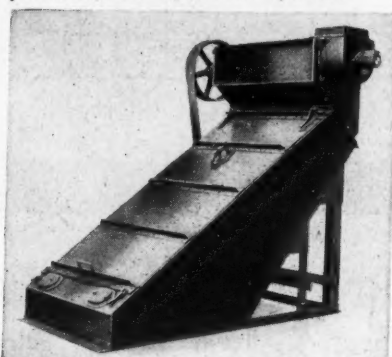
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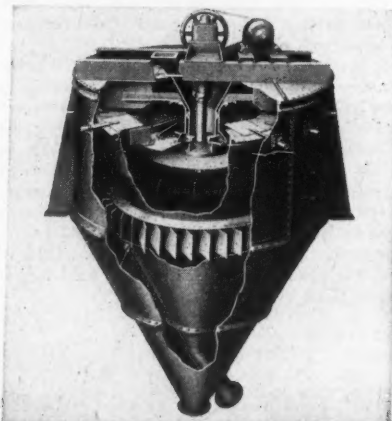
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By ROBERT D. GOODALL
Assistant to the Vice President—Marketing
The Davison Chemical Corporation

Attended Yale University.
Started business career with
Detroit, Toledo and Ironton
Railroad in 1934.

Joined present company as
Sales Trainee in 1939. Later
became Sales Manager of Industrial
Division. Appointed to
present position in December,
1950.



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Requirements for new products, new ways to use old ones,

(Continued on page 149)

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CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

The News Magazine of Processing Developments and Control

VOL. 14

JUNE, 1951

No. 6

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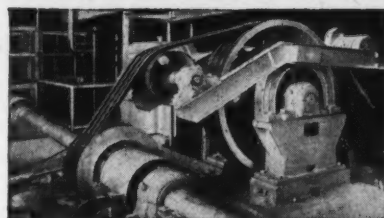
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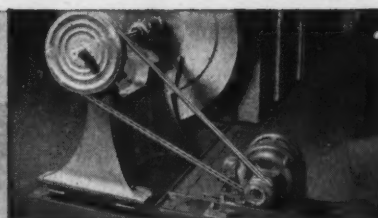
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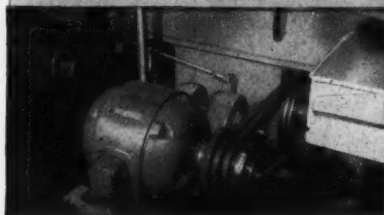


Paper Making Machine—Motion Control Vari-Pitch drive synchronizes paper machine sections.

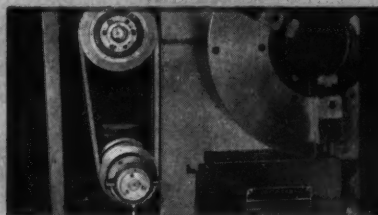


Air Conditioning unit—Stationary Control Vari-Pitch drive provides for seasonal adjustments.

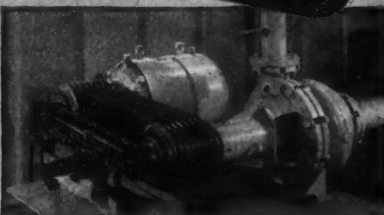
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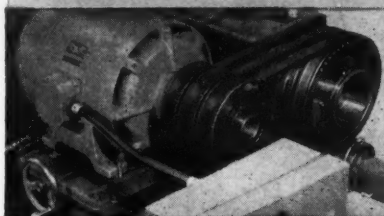
Cigarette Making Machine—Stationary Control Vari-Pitch drive provides for infrequent speed changes.



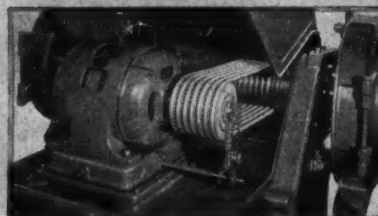
Pipe Threading Machine—Automatic Vari-Pitch drive gives simple, stepless hand-wheel speed changes.



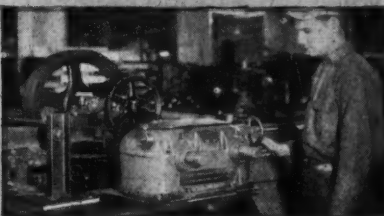
Solids Handling Pumps—Double Motion Control Vari-Pitch drive provides extra wide speed range.



Automatic lathe—Automatic Vari-Pitch sheave gives stepless speed changes for making ultra-fine finish.



Grinder—Motion Control Vari-Pitch drive holds cutting speed constant as diameter of wheel wears.



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When inquiring check CP 4844 on handy form, pgs. 2-3

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When inquiring check CP 4845 on handy form, pgs. 2-3

HIGHLIGHTS

(Continued from front cover)

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- Three-tank Mold Cleaning Line Assures Quality Foam Rubber Products 8
- Ultrasonics Prevents Formation of Industrial Boiler Scale 12
- Control of Time-temp Heating Curve Facilitated by Use of Ceramic Cup Burners in Radiant Heater 14
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- Viscosity of 2% Detergent Sol'n Is About 300 Centipoises 23
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CHEMICAL PROCESSING



Write Dept. 1-6 for free booklet listing properties of pipe and welding fitting and flange materials.

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JUNE, 1951



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When inquiring check CP 4846 on handy form, pgs. 2-3

Continuous Measurement of Density of Filter Backwashing Effluent Minimizes Sugar Loss

Method also saves hot water and prevents dilution to point where recovery is uneconomical

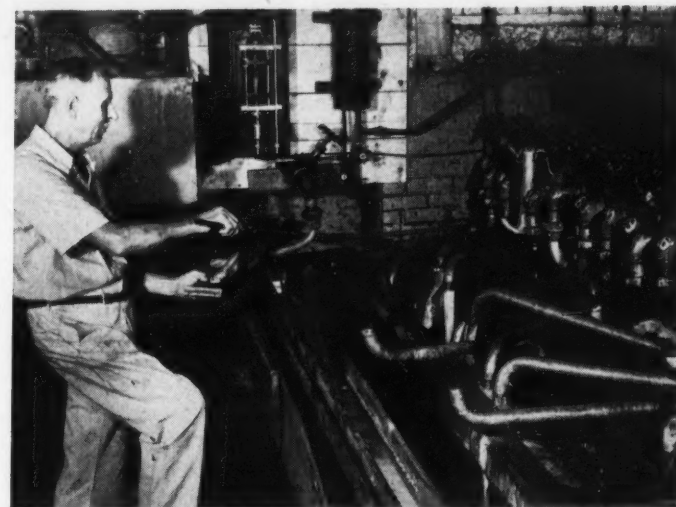
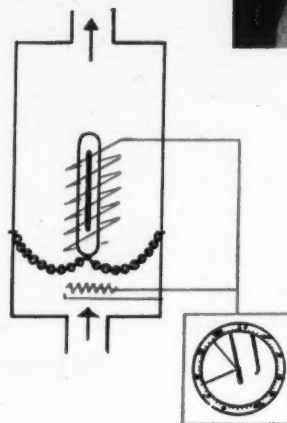
PROBLEM: Due to the use of intermittent, manual checking of density and temperature of effluent during backwashing of sugar filters at a large refinery, about \$30 to \$40 worth of sugar was lost every day in the discarded cake. This method of checking density was only accurate to about 0.5° Brix.

Manual checking as a means of control was not satisfactory for two other reasons: 1) dilution was sometimes carried to such a point that recovery was not economical, and 2) hot water (180°F) was wasted because backwashing was carried too far in some cases.

Solution: Backwash effluent is now sent through a device for continuously measuring its density, called a Densitrol. The refinery uses 72 char filter in three banks. One Densitrol is used for each bank, and one filter in each bank is backwashed at any one time.

Diagram reveals operating principle of the Densitrol system

The Densitrol makes use of a plummet-chain assembly to indicate density of liquid flowing through its measuring chamber. As the liquid being measured increases or decreases in density, the plummet rises or falls (similar to a hydrometer, but the Densitrol plummet is totally sub-



Densitrol in this sugar refinery continuously indicates and records sugar solids

merged). Plummet position is determined by an electrical position-measuring system which transmits the signal to an indicator calibrated in density units. The system can be used for control, with modifications.

Results: Measurement with the device is accurate to 0.2° Brix or better. Sugar losses have been greatly decreased, hot water is not wasted, and dilution is not carried to an uneconomical point.

Source: Densitrol is a product of Precision Thermometer & Instrument Co., Dept. CP, 1434 Brandywine St., Philadelphia 30, Pa. . . or for more information check CP 4847 on handy form, pages 2 and 3.

Three-tank Mold Cleaning Line Assures Quality Foam Rubber Products

Alkali and acid treatment of steel and aluminum molds removes burned-on deposits, brightens surfaces



PROBLEM: Deposits had to be removed from the steel and aluminum foam rubber molds of a large eastern manufacturer so that they would not be transferred to the finished product. These deposits, consisting of baked-on lubricant, such as Carbowax or stearates, chunks of rubber and carbon, continue to build up during use of the mold.

Solution: Manufacturer employs a cleaning line consisting of three tanks, each large enough to handle



Photo courtesy Hewitt Robins Inc., Restfoam Div., Buffalo, N. Y.

Overall view of installation for cleaning foam rubber molds. Tank in background contains hot alkaline solution, center tank is for rinsing with cold running water, and tank in foreground contains hot acidic solution. Molds pass from back to front

the largest molds used, and an overhead hoist to aid movement of molds.

The first tank contains a solution of an inhibited alkaline type material (Oakite No. 36) at strength of 8 oz per gal of water and at temperature of 180°F. Molds are soaked for about 20 minutes to remove outer layer of burned-on carbon deposits.

The second tank is for rinsing after the alkaline treatment. Clear water runs continuously through this tank. A hose in the hands of the operator is also used here. After rinsing, the molds are placed into the third tank which contains a solution of a special acidic type material (Oakite No. 34) at strength of 8 oz per gal of water and at temperature of 180°F. Molds remain in the solution for about 15 minutes, during which time the under layer of lubricant is removed and the metal is brightened considerably. Final rinsing and drying follows before molds are returned to production.

In the few instances where work does not come out 100% clean, light brushing with a bristle brush completes the operation.

Results: Efficient, periodic cleaning of molds, as practiced here, assures a clean foam rubber product.

Since original installation of cleaning process, the foam rubber ingredients were changed. Immediately, the molds from the cleaning process started to come through in poor condition. After careful testing with eight different Oakite compositions, it was found that two entirely different ones produced the desired cleaning effect that had been obtained before the ingredient changes. These compositions were immediately substituted for the original compositions.

Source: Oakite Products, Inc., Dept. CP, 22 Thames St., New York 6, N. Y. . . . or for more information check CP 4848 on handy form, pages 2 and 3.

Up-and-down motion speeds cleaning of stainless steel filter leaves . . .

compact machine plus alkaline cleaner are employed on leaves filtering antibiotic process solutions

Problem: A large amount of time was required to clean stainless steel filter leaves employed in filtering antibiotic process solutions. The openings frequently became clogged with solids.

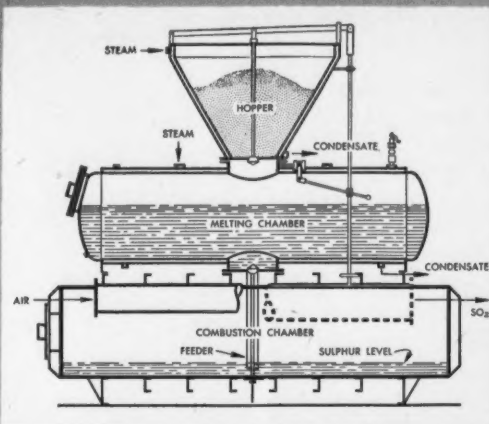
Solution: Various cleaning compounds were tried, and Magnus 60, a highly alkaline cleaner without the unpleasant fumes or dust of straight caustic solutions, was selected.

One important factor in cleaning was found to be proper agitation of the leaves through cleaning solution. This mechanical agitation is suitably provided by the Magnus Aja-Dip cleaning machine. This unit moves the work up and down 60 times a minute. Operation is fully automatic except for loading and unloading. The machine can be equipped with gas, electric, oil or steam heating equipment. It is insulated, contains necessary controls and has a hinged cover.

Results: Filter leaves can be completely cleaned in this machine in 3 to 5 hours, using Magnus 60 and a final cold water pressure spray rinse as leaves are being removed from machine. Magnus 60 has no harmful action on stainless steel.

Source: Machine and alkaline cleaner are made by Magnus Chemical Company, Inc., Dept. CP, South Ave., Garwood, N. J. . . . or for more information check CP 4849 on handy form, pages 2 and 3.

JUNE, 1951



OPERATING PROCEDURE

Solid sulphur is charged into the hopper of the melting chamber, around which live steam is introduced at about 25 pounds gauge pressure (if steam is not available, an electric heating element is supplied). The melted sulphur is fed to the combustion chamber by means of the feeder, which automatically maintains the correct level. Compressed air, or air furnished by a blower, is used for combustion. The quantity of air supplied regulates the concentration of SO₂ produced.

Since the introduction of the feed is below the surface, the burning area is never disturbed. This, together with the unchanging level of molten burning surface, and a controlled air supply, guarantee a constant burning rate and thereby a uniform production of SO₂.

ONLY ACME Sulphur Burners PROVIDE

An ordinary sulphur burner, which burns solid sulphur on a tray or rotating cylindrical surface, cannot provide a definite, constant burning rate. Since ordinary sulphur contains a small percentage of organic matter, this matter accumulates as a carbonaceous scum on the surface of the burning sulphur, and gradually extinguishes the fire. In order to overcome this factor the Acme Sulphur Burner is operated at a controlled rate sufficient to burn off this scum.

In an ordinary burner, the addition of a fresh charge of sulphur to the burning surface disrupts the burning rate for several hours. The Acme Sulphur Burner has a special feeding device that feeds melted sulphur to the burner in a manner that does not disturb the burning surface, at the same time maintaining a constant level of burning sulphur. Thus, uniform production, complete combustion, and continuous operation result. Operation is possible under pressure or vacuum.

DATA & DETAILED DESCRIPTION ON REQUEST

ALL THREE BASIC REQUIREMENTS

- 1 CONTROLLED, UNIFORM PRODUCTION OF SO₂
- 2 COMPLETE COMBUSTION
- 3 CONTINUOUS OPERATION



When inquiring check CP 4850 on handy form, pgs. 2-3

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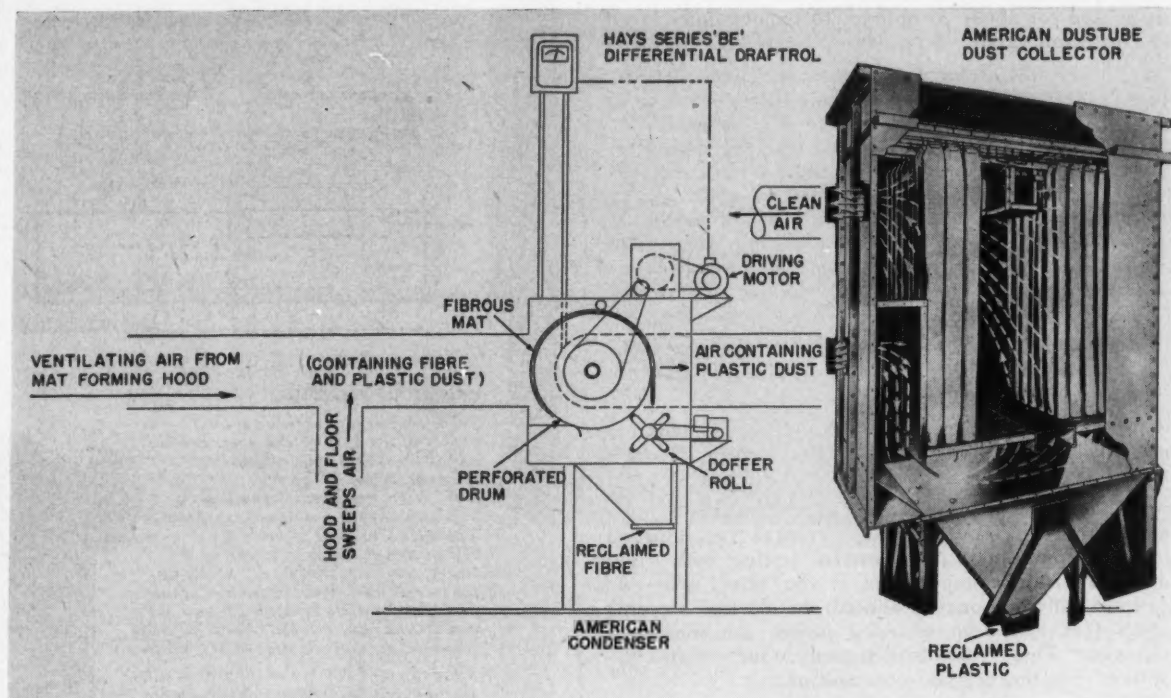


BALDWIN-HILL CO. 881 BREUNIG AVE. TRENTON 2, N.J.

When inquiring check CP 4851 on handy form, pgs. 2-3

Page 10

New Solutions
OF PROCESSING PROBLEMS



Schematic flow diagram of process for recovering fibre and plastic dust from air stream

Fibre and Plastic Powder Recovered by Dust Collecting System

Insulation manufacturer is able to reclaim materials from ventilating system of mat forming hood

PROBLEM: During production of insulating materials for cars and refrigerators, fibre of various types, such as jute and glass, and plastic dust were drawn off by ventilating air from the mat forming hood. Since this loss of material was substantial, the processor naturally wished to reclaim the fibre and plastic.

Solution: Air containing the fibre and plastic dust is passed through an American condenser, which removes the fibre, and then through an American Dustube dust collector, which removes the plastic dust. (Both of these pieces of equipment are made by American Wheelabrator and Equipment Corporation, Mishawaka, Ind.)

The condenser is a motor driven perforated drum equipped with air seals at top and bottom. All of the air flows through the perforations from the outside of the drum to the center. Fibre deposits on the drum while the plastic dust passes through. Drum rotates and the mat of fibre either separates from the drum and falls or is removed by the doffer roll.

Thickness of the fibrous mat on the condenser drum determines proper collection of fibre. If uncontrolled, the thickness varies with the type of fibre used. A Hays Series BE Draftrol is employed for thickness control. This device measures the pressure differential across the mat and drum. It has a slack leather diaphragm unit with contacts for control. The drum turns continuously until mat becomes too thin, at which time the differential pressure decreases to a point where the Draftrol breaks the drum motor circuit. When mat thickness increases to a point where the proper differential pressure again exists, a contact is made which restarts the drum motor.

Results: This installation has made it possible to recover and reclaim the fibre and plastic dust formerly lost.

Source: The Hays Corporation, Dept. CP, Michigan City, Ind. . . . or for more information check CP 4852 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

**Continuous emulsion preparation
based on controlling ratio
of 3 liquid streams . . .**

automatic system used by paper mill to prepare rosin size features 3-cylinder gang pump

Problem: The use of dry rosin and, in particular, rosin emulsion by large paper mills requires either large storage capacity, frequent batch emulsion preparation or continuous emulsion preparation. Because continuous preparation would eliminate large storage space or intermittent operations of the other two methods, several companies have worked on the development of an automatic rosin emulsifying process. Main requirement was some means for closely controlling the ratio of hot rosin to hot water to cold water.

Solution: System installed at a large western wood processing corporation uses a 3-cylinder gang pump. Hot rosin is pumped in controlled volume to an eductor-mixer along with a metered quantity of hot water. As shown in the drawing, the resulting emulsion goes to a mixing tank where a metered quantity of cold water is added.

Controlled volume pump, mounted on a welded steel base plate and driven by a 3 hp, 3-phase totally enclosed motor through 2 speed reducers, has 2 pumping cylinders with a maximum capacity of 900 gph against 15 psi discharge pressure. These cylinders handle water at 170°F and cold water. Construction includes aluminum bronze liquid ends, seats and plunger, with Hastelloy C ball-checks.

Third pumping cylinder handles up to 91 gph of 80% rosin size at a temperature of 170°F. Steam jacketed liquid end has a surface hardened stainless steel plunger with flush stream connections to the packing gland lantern ring.

To prevent pump and motor damage in case the rosin freezes in the liquid end, a special coupling is used on the speed reducer driving the rosin pump. Coupling

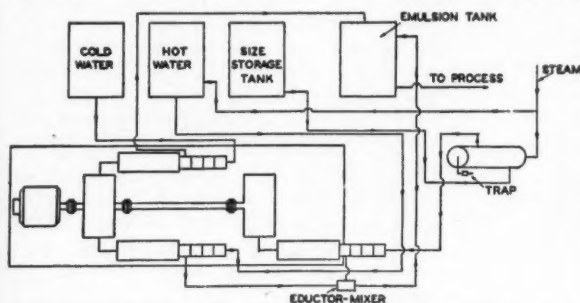


Diagram illustrates flow lines for continuously making rosin emulsion. Box around 3-cylinder pump represents steel base plate

will open if a pre-set torque is reached. Simultaneously, a micro switch is actuated by the movement (springing apart) of the coupling and thereby cuts off the power supply to the motor drive through a suitable relay in the motor starter.

Although aluminum bronze construction was used in this pump, 18-8 stainless steel is also available.

Results: Ratio of rosin to hot water to cold water is closely maintained, so that continuous preparation of rosin size by this method has been quite satisfactory.

Source: Three-cylinder gang pump used in this application is a product of Milton Roy Company, Dept. CP, 1300 East Mermaid Ave., Chestnut Hill, Philadelphia 18, Pa. . . or for more information check CP 4853 on handy form, pages 2 and 3.

**THINK of the advantages Tygon Tubing
offers you as a piping medium!**

Its clarity permits full solution visibility all along the flow line. Its mirror-smooth, non-wetting surface means faster flow. Its non-toxic nature assures complete freedom from product contamination. The chemical inertness of Tygon, its non-aging properties, its natural toughness and abrasion-resistance mean long, trouble-free life. Tygon's true flexibility simplifies installation, and the ease with which it can be disassembled, cleaned (steam sterilized if necessary) and re-assembled saves time and money.

And Tygon Tubing is available in continuous lengths in bore sizes up to 2".

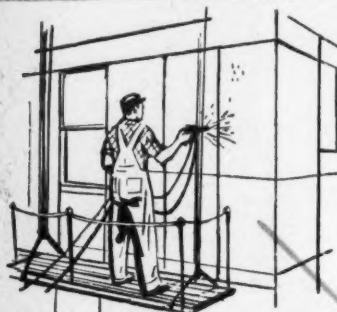
May we send you more detailed information?
Write the U. S. Stoneware Co., Tallmadge Square,
Akron 9, Ohio.

**CLEAR, NON-TOXIC, FLEXIBLE TYGON PLASTIC PIPE PROVES A BETTER
PIPING MEDIUM FOR LIQUID FOODS, BEVERAGES AND CHEMICALS**

When inquiring check CP 4854 on handy form, pgs. 2-3

WE LIVE—
WE BREATHE—
WE THINK—

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Gilsonite Insul-Mastic—The only mastic coating ever approved under original U. S. specifications for the preservation of bombers and war material. Moisture vapor transmission rate of only .01 grams per 24 hours per 100 square inches per 1/8" thickness by actual government test.



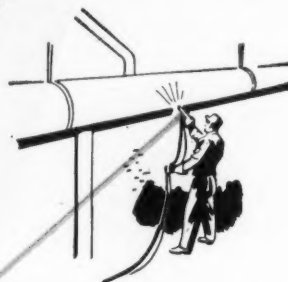
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The only business of the Insul-Mastic Corporation of America is the manufacturing of the best coatings possible to formulate. Our entire research and development is concentrated solely upon the production of better coatings. We have no other lines to divert us from this one aim—which is one of the many reasons why we excel in:

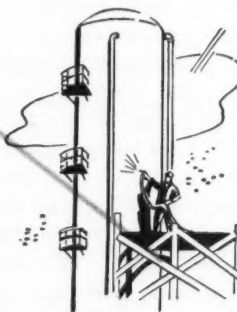
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NEW SOLUTIONS of processing problems

Ultrasonics prevents formation of boiler scale . . .

wave-producing device keeps surfaces clean during 10-week test on 125 psi boiler

Problem: When The British Rubber Co. Ltd., Lachine, Quebec, purchased a new 180 hp, horizontal return fire tube boiler, it decided to investigate means of preventing the buildup of lime scale. This could well become a problem because the makeup water would average 20% or about 3000 gal per day. Boiler was to operate at 125 psi steam pressure, blowdown to be carried out daily.

Solution: Crustex, an ultrasonic wave-producing apparatus for removing and preventing formation of solid limestone crust, was connected to the boiler. Device brings about impulses in the water in boiler.

After a 10-week test run, the boiler was opened for inspection. All tubes and walls of shell were found in excellent condition. At front end of boiler, resting on tube sheet, about 15 lb of loose scale flakes were found in a pile about 3" high by 1 1/2' diam. Rest of the shell was free of mud or sludge.

At various spots, the thin scale was loosening up from the metal sheet and could be easily washed off with running water. This scale was about 0.002" thick. It is believed that boiler scale built up on the hot surfaces until this thickness was reached, when scale loosened.

Scale had the following analysis: silicates (insoluble in aqua regia), 46.0%; iron oxides, 4.6%; sulfates, 24.4%; carbonates, 25.0%.

Throughout the trial, pH of water in boiler was found to average 9.5, as compared with 10.75 in one of the company's other boilers using chemical compounds.

Results: The 10-week test run at full capacity showed that the Crustex apparatus exhibited high efficiency in preventing serious buildup of scale. However, the ultrasonic method does not keep scale from forming entirely. As has been mentioned, the scale builds up to about 0.002" and then begins to flake off. Thus, a small amount of scale is almost always on the surfaces to prevent corrosion. The presence of only a low percentage of rust in the scale sample is proof of low corrosion in system.

The absence of mud or sludge on the fire sheet, as compared with relatively high sludge formation in boilers treated with chemical compounds, was striking. It is believed that a boiler using ultrasonic scale removal won't have to be washed as often as one using chemicals.

The British Rubber Co. Ltd., on the basis of the trial run, is of the opinion that this method of scale removal, as compared with chemical removal, will require less attention on the part of engineer or laboratory, and will probably have a lower maintenance cost.

Source: Crustex is made by Velan Engineering Company, Dept. CP, 1216 Drummond St., Montreal, Canada . . . or for more information check CP 4856 on handy form, pages 2 and 3.

Problems in plant maintenance answered in 228-page book

An extensive discussion of recent developments in problems of plant maintenance is contained in 228-page, 8 1/2 x 11" book illustrated with 48 tables, diagrams, graphs, and charts. Subjects covered include preventive maintenance; inspection procedures and frequencies; records and reports; training personnel for maintenance; maintenance

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When inquiring check CP 4855 on handy form, pgs. 2-3

costs; incentive payment of maintenance workers; planning and scheduling maintenance operations; applied lubrication in industry; housekeeping; painting and decorating; floors; and standards of sanitation.

There are also discussions on maintenance of electrical, power plant, and heating equipment; problems of the small plant; selection and maintenance of lighting equipment; and maintenance in various specialized plants. To obtain "Techniques of Plant Maintenance — 1951", remit \$6 direct to Clapp & Poliak, Inc., Dept. CP, 341 Madison Ave., New York 17, N. Y.

**Improved mixing procedure
cuts white enamel cost
14c per gallon . . .**

dispersion type mixer gives fine grind and high gloss, saves much clean-up time

Problem: Six hours were required to disperse ingredients during production of white baking enamels at the plant of a large producer of industrial finishes in the East. Material was dispersed on a 12 x 30, 3-roll, medium speed roll mill. Three passes were necessary to obtain the required #7 grind.

Rolls had to be completely washed with solvent at the end of each turn.

Solution: A Patterson 5-gal working capacity horizontal dispersion type mixer (Kneadermaster) was substituted for the roll mill.



Dispersion type mixer used in manufacture of enamels

Fifty gallons of finished product are produced in two hours, instead of six as was the case with the roll mill.

Complete washing with solvent is unnecessary . . . cleanup is accomplished by allowing part of the thinner used in reducing the batch to remain in mixer overnight.

Results: Savings in man-hours for production and clean-up resulted in a reduction of cost of finished product exceeding 14c per gallon. Fineness of grind was improved from 7 to 7½, with a gloss reflectance measured at 60 gloss meter reading of 95 over 100%. Settling was reduced due to better suspension through better grind.

Source: Kneadermasters, in sizes ranging from ¾ to 200-gal working capacity, are manufactured by The Patterson Foundry & Machine Company, Dept. CP, East Liverpool, Ohio . . . or for more information check CP 4857 on handy form, pages 2 and 3.

inactivate metallic contaminants by sequestering with Pfizer Gluconic Acid

Unwanted traces of iron, aluminum, copper and other metals picked up from pipe lines and processing equipment can be rendered inactive by the use of small amounts of gluconic acid. This non-toxic, non-volatile, non-corrosive acid acts as an effective sequestering agent...makes it all but impossible to detect the metal impurities by common analytical procedures.

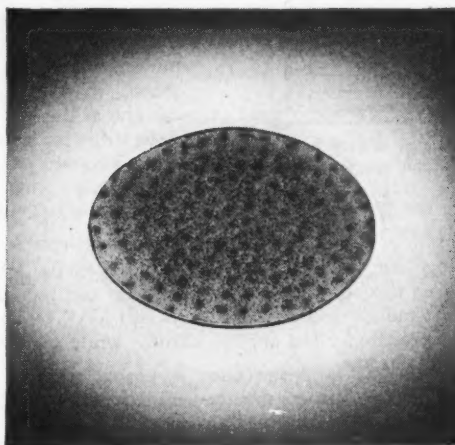
Gluconic acid prevents the precipitation of metallic cations at pH values ranging from 4.5 to relatively high caustic solutions. In the case of calcium and magnesium it has been proven particularly effective as a sequestering agent in relatively strong—3%—caustic concentrations.

One of the mildest acids available, gluconic acid is used as a sequestering agent in many processes including textile printing, industrial water treatment and tanning, and in detergent formulations. It is marketed as an amber, 50% aqueous solution possessing a slight acetous odor, and has a specific gravity of 1.24 at 25°C.

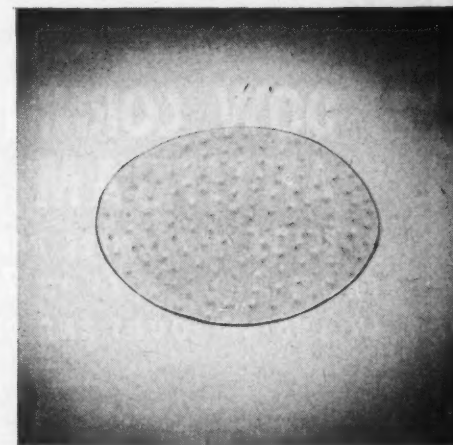
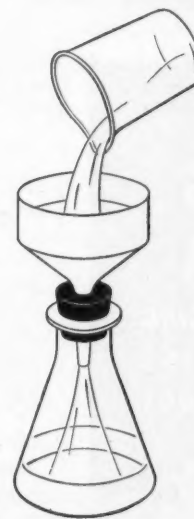
Write our Technical Service Department today for complete information, samples and prices.



PFIZER



Without Gluconic Acid



With Gluconic Acid

A small amount of gluconic acid was added to one of two beakers containing an iron solution. Both solutions were made alkaline by the addition of caustic soda. In the case of the solution without the gluconic acid, a precipitate of ferric hydroxide was formed. The solution with the gluconic acid remained clear even though adjusted to the same alkalinity.

GLUCONIC ACID

AMMONIUM GLUCONATE • CALCIUM GLUCONATE • COPPER GLUCONATE • FERROUS GLUCONATE • MAGNESIUM GLUCONATE
MANGANESE GLUCONATE • POTASSIUM GLUCONATE • SODIUM GLUCONATE

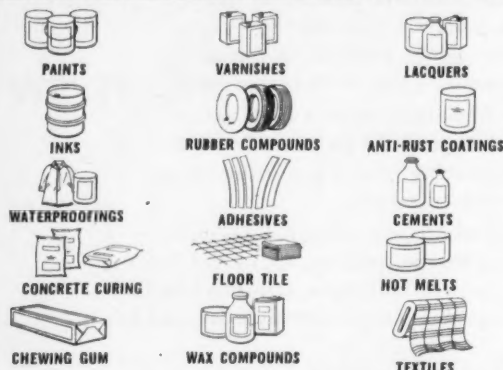
CHAS. PFIZER & CO., INC., 630 FLUSHING AVE., BROOKLYN 6, N. Y.; 425 NORTH MICHIGAN AVE., CHICAGO 11, ILL.; 605 THIRD ST., SAN FRANCISCO 7, CALIF.

When inquiring check CP 4858 on handy form, pgs. 2-3

PICCOUMARON

Para-Coumarone-Indene
RESINS

A GROUP OF THERMOPLASTIC SYNTHETIC RESINS USEFUL FOR:



The applications shown above indicate some of the almost endless uses for this excellent resin.

Piccoumaron Resins are available in grades from liquids to brittle solids. Colors vary from pale yellow to deep reddish brown. They are soluble in coal tar, turpentine, terpene and most chlorinated solvents. Good resistance to acids, alkalis and salt.

Write for samples and complete data on PICCOUMARON Resins.

PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.

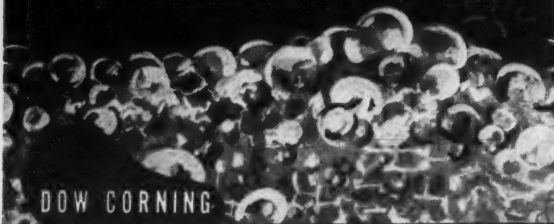
Clairton, Pennsylvania
Plants at
Clairton, Pa.; West Elizabeth, Pa.;
and Chester, Pa.
Distributed by Pennsylvania Fink
Chemical Co., Pittsburgh 30, Pa.
and Harwick Standard Chemical
Co., Akron 5, Ohio

When inquiring check CP 4859 on handy form, pgs. 2-3

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EFFECTIVE IN FOAMERS RANGING
FROM ADHESIVES TO ZEINS
INCLUDING FOODS AND DRUGS



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When inquiring check CP 4860 on handy form, pgs. 2-3

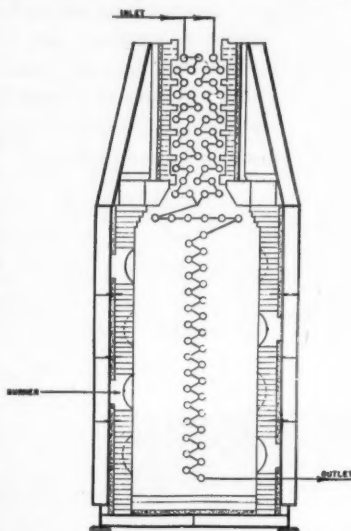
NEW SOLUTIONS of processing problems

Control of time-temp heating curve facilitated by use of ceramic cup burners in radiant heater . . .

enables heater to be used for wide variety of charge stocks; maintenance and fuel costs are low

Impressive results have been obtained from a radiant heater using flameless ceramic cup burners as a radiant heat source. In addition to being highly efficient, this type of heat source has low maintenance and fuel costs, gives smooth operation with high wind velocities, and is capable of processing a wide variety of charge stocks because it permits any desired shape of the time-temperature heating curve of the oil.

Based on present performance at one refinery, this type of radiant heater is said to have great possibilities for both the large and small refiner, not only for the thermal cracking and visbreaking of gas oils, cycle oils, and heavy oils, but but also for the thermal destruction of light hydrocarbons such as ethane, propane, etc., or other applications where short residence times are essential for proper results.



Cross section of radiant heater using ceramic cup burners

pass through the 42-tube convection section counter-current to the flue gases.

After leaving the convection section, the streams are joined and pass through a 6-tube shock section and thence into a 31-tube radiant section. All tubes are 3 1/2" OD x 1/2" wall. Convection tubes are 7% chrome while radiant tubes are 9% chrome.

There are 56 ceramic burners mounted in each wall. Each burner is independently controlled, with each cup projecting heat uniformly over an area overlapping that serviced by adjacent burners. A premixed air-gas mixture issues from a spud at the entrance of the burner, entrains additional air with which it is thoroughly mixed, and passes through 24 grooves around the ceramic tip of the burner. These grooves issue radially into a ceramic cup which is so shaped that numerous small flames wipe the inner surface of the refractory plate and heat it to incandescence at a reported temperature of 2400°F. High cup temperature and intimate mixing assure optimum conditions for complete combustion.

Refractory material used in making the cup burners has proved to be durable and is of such quality as to be readily brought to incandescence in order to produce the full effect of radiation shortly after combustion is started. Although the furnace has on occasion been fired at ex-

LITHIUM FORMS Pioneered by METALLOY...



Sept. 1946 . . . LI AMIDE
Feb. 1947 . . . CARTRIDGE
April 1947 . . . WIRE
Oct. 1948 . . . SHOT
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4.50, 9.0 & 108.0 Gram
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AS A CONTRIBUTION TO ORGANIC RESEARCH, Metalloy's technical staff has prepared an "Annotated Bibliography on the use of Organolithium Compounds in Organic Synthesis." Annual Supplements will follow.
Let Metalloy and Lithium go to work for you, today. Write Dept. CP for specific data on any of the above.
IF IT'S LITHIUM — IT'S METALLOY

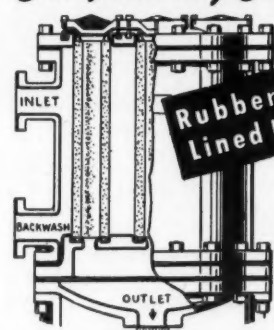
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SAND TOWER MINNEAPOLIS, MINN.

When inquiring check CP 4861 on handy form, pgs. 2-3

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1 Easy cleaning, without dismantling, by simple backwashing.

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Filter tubes inert to acids or alkalis.

Write for Bulletin 9348

R. P. ADAMS CO., Inc. 243 E. PARK DRIVE
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When inquiring check CP 4862 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

tremely severe conditions, the original brickwork in both sections is still in excellent condition.

Furnace operation

Typical test results obtained while cracking gas oil showed the following:

- 1) Average radiant heat transfer rate is 17,000 Btu/sq ft/hr.
- 2) Average convection heat transfer rate is 4920 Btu/sq ft/hr.
- 3) Heater efficiency is 81.5%.
- 4) Excess air in stack is 9.2%.

Sealing leakage points around piping and thermocouples should further improve test results. Operation of furnace has been smooth in spite of the variable high velocity winds prevalent in the refinery area.

Firebox temperatures seldom exceed 1550°F even under severe firing rates. This low box temperature combined with the low percentage of excess air present should reduce oxidation of the furnace tubing and tube sheet material considerably. Savings effected by reducing excess air from 100% to 10% on a 30 MM Btu heater, using 15c per MM Btu gas, amount to \$15,600 yearly on gas consumption alone. Also, in view of the low excess air, a split tube should cause little firebox fire damage.

A totally inspiring type of radiant cup burner was tried in several radiant heater installations and gave very satisfactory operation even with wind velocities as high as 40 mph. Use of this type eliminates use of air blower, ratio controller, and controls and safety devices necessary with air-gas premixing equipment. Burners have no moving parts so that there is no maintenance problem, and they require practically no attention from the operator.

Commercial results

A single-pass cracking with the radiant heater of both catalytic cycle oil and virgin gas oil, resulted in conversions of 40-50 vol% and higher without excessive coil coking. In addition, the radiant heater yielded a gasoline having a research octane rating of 4 to 6 units higher than is normally obtained from thermally cracking a similar charge stock with conventional heaters at the refinery. It was not possible within the coking limits on the old type box furnace to reach the conversion levels obtained on the radiant heater.

Visbreaking of a heavy residuum from a high vacuum distillation process with the radiant heater was accomplished with excellent results. Fuel oil yields were substantially reduced over those obtained by cutback of the vacuum residuum to fuel oil specifications. In addition, catalytic cracking feedstocks were produced resulting in increased gasoline and distillate yields.

The flexibility and degree of freedom available in controlling the shape of the time-temperature heating curve is utilized to full advantage when visbreaking. Because a straight line time-temperature curve with no "tail" was found suitable for this operation, the top row of burners on both sides of the radiant furnace was shut off and the last few tubes fired hard to hold the heating curve to a straight line, thereby preventing the heat of cracking from flattening the curve. Heat transfer rates as high as 30,000 to 40,000 Btu/sq ft/hr have been calculated for the last tube in the furnace.

(From an address given by C. C. Tate, Manager, Refining Department, Phillips Petroleum Company, at the 39th Annual Meeting of The Western Petroleum Refiners Association.)



How Celite Mineral Fillers give a product better dispersion . . .



Making a better "killer" of insecticides



To increase the effectiveness of their product... add more "killing power"—many leading producers of insecticides add Celite Mineral Fillers to their dust as a standard ingredient.

This use of these diatomite powders is based primarily on (1) their light weight and great bulk which improve

dispersion of the poison, and (2) their high absorption capacity that produces dry dust concentrates from both low melting point solids and liquid poisons, thereby increasing the potency of the final product.

These and other unusual physical characteristics adapt Celite Mineral Fillers to numerous industrial uses.

THESE CELITE PROPERTIES BENEFIT MANY TYPES OF PRODUCTS

Because of their inertness and great bulk per unit of weight, Celite Mineral Fillers make ideal bulking agents for powders and pastes. Their tiny multi-shaped particles interlace to stiffen and strengthen admixtures. The microscopically small facets of these particles diffuse light so effectively that they will give any desired degree of flatness to a surface film. And their porous, thin-walled cellular struc-

ture can be utilized to impart a delicate, non-scratching abrasive action.

You may find Celite the "extra something" needed to lift your product above competition. Why not discuss its application to your problem with a Celite engineer? For further information and samples, write Johns-Manville, Box 290, New York 16, N. Y. In Canada, 199 Bay St., Toronto, Ontario.

CHECK LIST OF PRODUCT BENEFITS OBTAINABLE AT LITTLE COST WITH CELITE MINERAL FILLERS

- Added Bulk
- Better Suspension
- Faster Cleaning Action
- Greater Absorption
- Improved Color
- Better Dielectric Properties
- More Durable Finish
- Increased Viscosity
- Elimination of Caking
- Higher Melting Point
- Better Dry Mixing
- Improved Dispersion

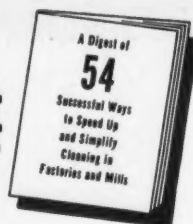


Johns-Manville CELITE®

MINERAL FILLERS

When inquiring check CP 4863 on handy form, pgs. 2-3

Yours FREE— 54 Ways to Cut Cleaning Costs



HERE'S a 16-page digest full of proved Oakite procedures for saving time and money on 54 big maintenance-cleaning jobs, such as:

- Descaling heat exchangers
- Desliming humidifiers
- Cleaning conveyor belts
- Steam-detergent cleaning

FREE copy sent on request. Write Oakite Products, Inc., 18F Thames St., New York 6, N. Y.

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When inquiring check CP 4864 on handy form, pgs. 2-3

Skin Irritations



**EFFICIENCY
IS SKIN DEEP**

You can't expect top production efficiency when skin irritations plague your plant workers—causing absenteeism and slow-downs. **TARBONIS** has a long record in hundreds of plants for overcoming and guarding against the recurrence of skin irritations.

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When inquiring check CP 4865 on handy form, pgs. 2-3.

Page 16

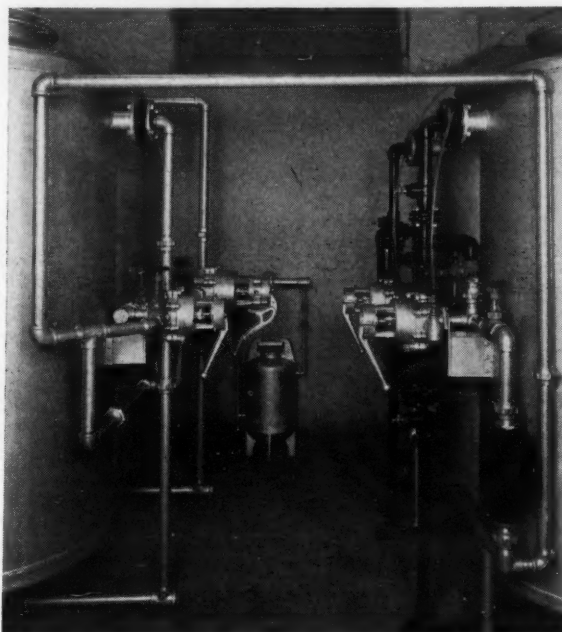
NEW SOLUTIONS of processing problems

Alcoholic beverages' taste, odor improved by passing through ion exchangers . . .

process has met success with Jamaica rum, grape brandy and bourbon whiskey

Problem: It is necessary to remove undesirable turbidity, tastes and odors from alcoholic beverages. These undesirables are particularly noticeable when a poor grain is used, such as was the case with bourbon whiskey near the end of World War II.

Solution: The beverage is passed through regenerated cation and anion exchange resins. If color re-



Deionizing installation removing dissolved solids from water used in beverage at midwestern bottling plant. Removal of solids, particularly alkalinity, enhances bouquet and shelf life

moval is desired, a special anion exchanger is used. This type of treatment has been applied successfully to Jamaican rum, grape brandy and bourbon whiskey.

The ionized material in a raw bourbon has been cut from 538 to 35 ppm by such treatment. During treatment, the pH rose from 4.5 to 4.7, and the proof dropped from 105 to 103.

Results: Definite improvement in taste and odor, without appreciable change in color. Ion exchange has been found to remove, or considerably decrease, organic acids, some aldehydes, salts, heavy metals and sulfides.

Source: Illinois Water Treatment Co., Dept. CP, 899 Cedar St., Rockford, Ill. . . or for more information check CP 4866 on handy form, pages 2 and 3.

How to use and maintain piping equipment told

Thirty-six-page manual covers the fundamentals of sound piping practices in easy, non-technical language. It discusses various types of valve designs and how each should be used; it illustrates and names over 80 types of fittings. More than half its pages are devoted to "how-to-do-it" features that are fully illustrated for

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CUT costly stud breakage, heater dismantling time, pitting of metal surfaces!

We'd like to send you a free sample of the new Fel-Pro C-5 "Hi-Temp" Thread Compound to try on your toughest thread compound problems, including alloy and stainless steels. Then you can see the amazing, money-saving results being obtained by the nation's largest refineries, utilities and process industries. Fel-Pro's exclusive Colloidal-Copper formula keeps metal parts separated, regardless of temperatures. Its neutral action solves the alloy and stainless steel pitting problems. One utility company reports that heater dismantling time has been cut from two days to four hours, by the use of Fel-Pro C-5 "Hi-Temp". Why not see what "Hi-Temp" can do for you . . . get your free sample and complete data sheet—write today!

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THREAD
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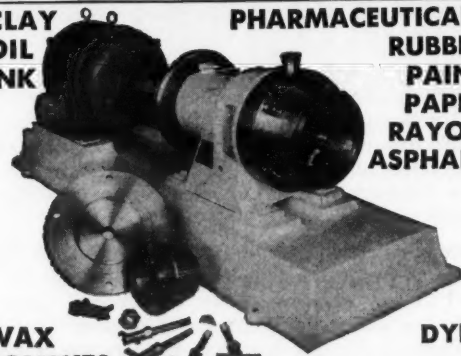
3337

When inquiring check CP 4867 on handy form, pgs. 2-3

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COLLOID MILLS**
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When inquiring check CP 4868 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

easy understanding. Included is selection guide that saves time and effort in choosing valves for common piping services.

"Piping Pointers" is issued by Crane Company, Dept. CP, 836 S. Michigan Ave., Chicago 5, Ill. When inquiring specify CP 4869 on handy form, pages 2 and 3.

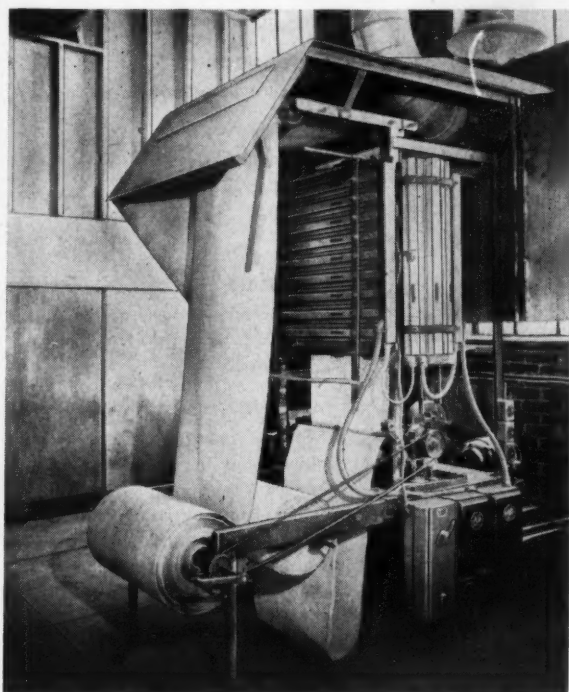
Radiant heat speeds coating of abrasive-cloth web nearly tenfold . . .

all-metal electric units are employed in curing resin on moving 27" wide cloth

Problem: Heat source employed in curing resin on 27" wide abrasive cloth at Simonds Abrasive Company in Philadelphia permitted a maximum web speed of only 3/4 fpm.

Solution: Resin is now cured by radiant heat. The compact installation for coating cloth with synthetic resin and curing under infrared heat is shown in photo. Rolls of cloth impregnated with abrasive grit are fed through dip tank, pressed through rollers to squeeze out excess fluid, then passed between radiant heater banks for curing, and finally rewound on rolls.

Twenty-four 230 volt, 1400 watt, all-metal electric radiant heaters are used. Nine heaters are on front



Radiant heaters cure resin on abrasive cloth in this installation

and back, and three on each side. They are operated two in series on 460 volts. Total installed capacity is 33.6 kw.

Results: Web can now travel at 8 fpm instead of 3/4 fpm as was previously the case. The 27" width of cloth is heated completely and uniformly.

Source: Heaters made by Edwin L. Wiegand Company, Dept. CP, 7500 Thomas Blvd., Pittsburgh 8, Pa. . . . or for more information check CP 4870 on handy form, pages 2 and 3.

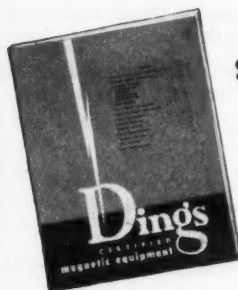
JUNE, 1951

4 WAYS TO DE-IRON Materials Carried on Conveyor Belts

DINGS magnets offer a variety of ways to meet problems caused by tramp iron—problems such as fires, explosions, machinery damage or product purification.

One of these ways is the ideal way and its choice is a joint affair—yours and ours. Outline your application to Dings. You can rely on their unbiased recommendation.

The magnets listed are but part of a complete line of magnetic separators which includes magnets for chutes, ducts, wet applications or fully self contained units. For a description of the complete line . . .

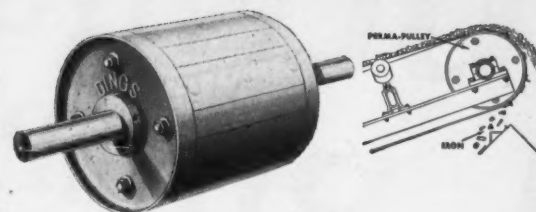


Send For Catalog
C-5000 A

In it can be found
the answer to any
magnetic separation
problem.

DINGS MAGNETIC SEPARATOR CO.
4731 W. Electric Avenue, Milwaukee 46, Wis.

Dings



1. DINGS PERMA-PULLEYS

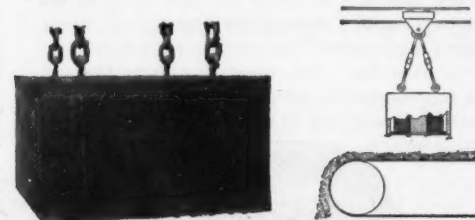
INTENSELY concentrated magnetic strength near the surface makes this the magnet to use where burden depths do not exceed 3". Installed as head drive pulley, tramp iron removal is fully automatic, simple. Non-electric, permanently energized it can be installed and forgotten. Catalog C-1007 A gives details.

Powerful, air-cooled electro magnetic pulleys are available for burden depths exceeding 3". Low operating cost, long life and extreme power characterize this work-horse of the Dings line. Catalog C-1001 A.



2. DINGS PERMA-PLATES

PERMA-PLATES are the simplest, most economical magnets available. Installed over the conveyor belt, they are extremely effective on shallow burden depths. Non-electric and permanent. Perma-Plates can be made self-cleaning. Catalog C-1205 A.



3. DINGS SUSPENDED RECTANGULARS

FOR the difficult jobs. Power close and power that searches down 12" to yank tramp iron out. Triple pole, double gap design gives edge to edge protection that can't be surpassed. Install horizontally, vertically or at an angle. Self-cleaning fully automatic models also available. Another model, the DEEP BURDEN Rectangular, is effective at distances to 18". Catalog 301-A.



4. DINGS MAGNETIC DETECTOR

THE Dings Magnetic Detector instantly signals when any magnetic object passes through the detector zone. Can be hooked up to sound an alarm and stop the belt. Ideal where the infrequency of tramp iron does not warrant the use of a magnetic separator, or where heavily loaded, high speed conveyor belts make iron extraction magnetically an impossible task.

When inquiring check CP 4871 on handy form, pgs. 2-3

OLIVITE Acid-Handling PUMP

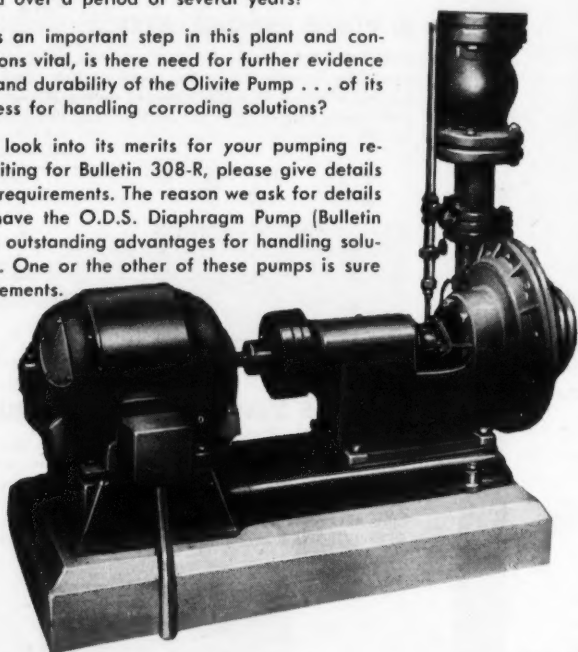
Approved to the Extent
of Over 100 Pumps in One Plant

HERE, in the east there's a large chemical plant with extensive acid pumping operations. Not only is the total volume handled very large but several different solutions, both hot and cold, are involved.

In this one plant there are over 100 Olivite Acid Handling Pumps . . . with purchases spread over a period of several years!

Since pumping is an important step in this plant and continuity of operations vital, is there need for further evidence of the efficiency and durability of the Olivite Pump . . . of its practical usefulness for handling corroding solutions?

We suggest you look into its merits for your pumping requirements. In writing for Bulletin 308-R, please give details of your pumping requirements. The reason we ask for details is that we also have the O.D.S. Diaphragm Pump (Bulletin 309-R) which has outstanding advantages for handling solutions and slurries. One or the other of these pumps is sure to fit your requirements.



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Melbourne

SOUTH AFRICA
E. L. Bateman
Johannesburg, Transvaal

When inquiring check CP 4872 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Bakelite uses magnetic separator to remove tramp iron from molding compounds . . .

6" stainless faced units are installed in lines ahead of drum packaging operation

Problem: Tramp iron was a possible source of contamination of phenolic molding compounds at the Bound Brook, N. J., plant of Bakelite Division, Union Carbide and Carbon Corporation.

Solution: Six-inch, stainless steel faced, plate type permanent magnets are installed in inclined loading



Stainless steel faced magnetic separators are in loading lines carrying phenolic molding compounds

lines through which the colorful, finely powdered compounds flow before they are packaged in drums. Powder flows at rate of 500 to 1200 lb/hr, with depth of material of about 1".

Results: Bakelite finds this type of magnet to be satisfactory for this purpose.

Source: Eriez Manufacturing Company, Dept. CP, 7 E. 12th St., Erie, Pa. . . or for more information check CP 4873 on handy form, pages 2 and 3.

Uniform nip pressure on paper mill rolls assures sheet of better quality . . .

load meter based on SR-4 resistance strain gages avoids errors due to friction, eccentric loading

Problem: United States Gypsum Company had trouble maintaining uniform nip pressures on dryer rolls at its Clark, N. J., plant. Products made in this plant are Sheetrock wall board, Rocklath plaster board, and Gypsum sheathing board.

Solution: The company installed a load meter, made by Downington Manufacturing Company, on one of its large combination felt and liner board machines. This meter makes use of standard load cells based on SR-4 bonded resistance wire strain gages. These cells permit direct measurement of roll loads, thus eliminating the effects of pin friction, knife edge friction, eccentric and misalignment loads, friction of piston packing or glands,

Niacet
TRADE-MARK

**SODIUM
ACETATE**

ANHYDROUS

*is made especially
for . . .*

BUFFERING

Against strong acids, as in corn syrup refining.

RUBBER PROCESSING

As an acid absorbent in the manufacture of neoprene crepe. For activating rubber accelerators.

ELECTROPLATING

For improving the anode efficiency at low temperatures.

PHOTOGRAPHY

For dry fixers and hardening powders.

DYESTUFFS

For the preparation of diazo compounds in developing azo colors.

SYNTHESIS

Of coumarin, cinnamic acid, azo chloramide, benzyl acetate, and many others.

TANNING

For the removal of insoluble calcium salts during tanning to produce a tear-resistant, flexible leather. For neutralizing pickled skins in chrome tanning to give amazingly short tanning periods.

For further information
write to:

**Carbide and Carbon
Chemicals Company**

A Division of

Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York 17, N.Y.

When inquiring check CP 4874
on handy form, pgs. 2-3

CHEMICAL PROCESSING



for
**SUBMERGED
OILLESS
BEARINGS**



WITH CONFIDENCE

- OPERATE DRY or SUBMERGED IN DYES, PLATING, CLEANING & CHEMICAL SOLUTIONS, GASOLINE, FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE — even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS & OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

GRAPHITE METALLIZING CORPORATION

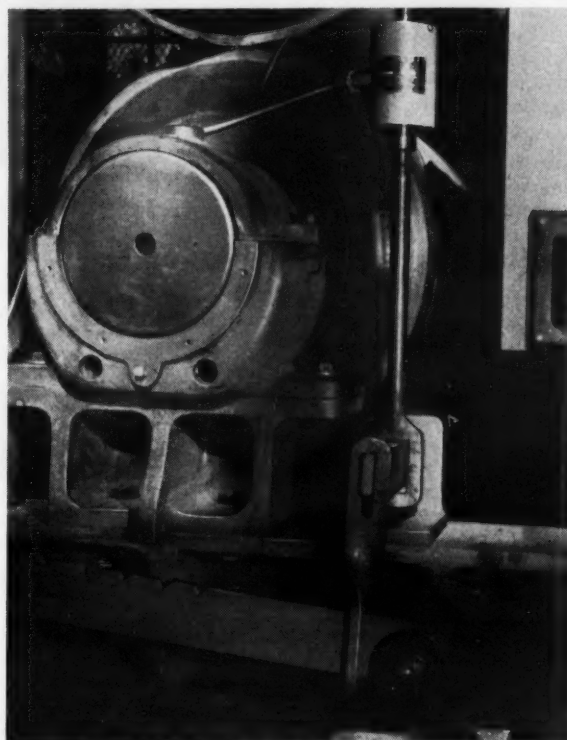
1004 NEPPERHAN AVENUE, YONKERS 3, NEW YORK

When inquiring check CP 4875 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

piston leakage, and inaccuracies of ordinary Bourdon type gages.

The load measuring unit is essentially a short steel column on which the SR-4 gages are bonded. Used as a link in the bar carrying the press load, the fine wire grids of the strain gages in the cell are stretched with changes in tension. This changes their electrical resistance. Four gages in each load cell are wired together



Shows how load meter is connected to dryer roll in this application

in the form of a Wheatstone bridge which is connected to an indicating, recording and controlling instrument that automatically regulates roll pressure.

Results: By closely controlling uniformity of nip pressure, the thickness of sheet is more uniform, and tensile strength, density and finish are improved. Faster production and reduced costs are reported.

Source: The SR-4 strain gages are made by Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. . . or for more information check CP 4876 on handy form, pages 2 and 3.

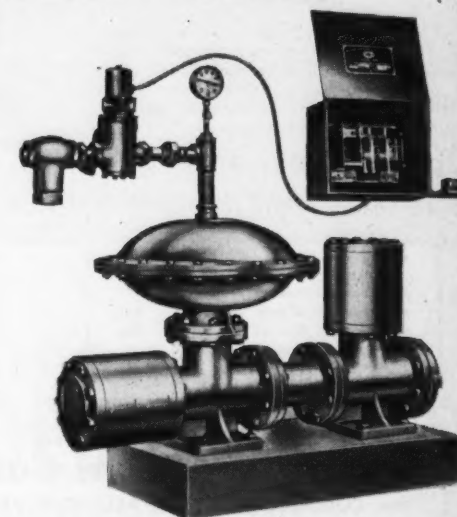
How to maintain floors

Illustrated by numerous photographs, diagrams, and drawings, 12-page brochure presents a complete, effective, and economical program for the care of wood, concrete, terrazo, linoleum, tile, and similar floors. Points discussed in detail include wear resistance; appearance, sanitation, cleanliness, and light reflectance; the use of sealers and hardeners; burnishing, buffing, and waxing; and the painting of concrete floors on, above, or below grade.

Brochure is printed in 2 colors. "Floor Maintenance" is issued by Tremco Manufacturing Company, Dept. CP, 8701 Kinsman Road, Cleveland 4, Ohio. When inquiring specify CP 4877 on handy form, pages 2 and 3.

ODS

DIAPHRAGM PUMP



Announcing the 4 inch size!

THIS PUMP, recommended for handling clear chemical solutions as well as many different slurries, has a design capacity of 100 gpm (based on water) and is capable of operating against heads up to 200 feet. Feed sources can range up to 15 feet below the pump.

As with the smaller ODS Pumps, certain structural features are outstanding: (a) no linkage to the diaphragm which is a solid unpunched, unslotted, piece of flexible rubber or neoprene; (b) no stuff-

ing box or high speed moving parts. Three different types of valves are available: ball, flap or diaphragm.

Bulletin 309-R will give you full details of the full line of ODS Pumps which come in the following sizes: 1 1/2, 1 1/2 A, 2, 2B, 3 and 4 inch. We have the Olivite Acid-Handling Centrifugal Pump in several sizes which might be better than our ODS Pump for your requirements, particularly if they involve highly corrosive solutions.

New York 18 — 33 W. 42nd St. Chicago 1 — 221 N. LaSalle St.
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WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

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E. L. Bateman
Johannesburg, Transvaal

When inquiring check CP 4878 on handy form, pgs. 2-3



Before you select a Temperature Regulator, compare low-cost Stacon with the rest. No other regulator has as many features or offers as many advantages as a Farris Stacon.

PROVE IT!

Make this Chekchart Test

	Farris Stacon	Air Operated	Self Operated
• Dirt Proof — Hermetically Sealed?	Yes	.....	.....
• Extreme Accuracy?	$\pm 1^\circ$	.....	.....
• Packing or Glands to Leak?	No	.....	.....
• Drop-tight Shut off?	Yes	.....	.....
• Vapor-stream Energized Super Power Pilot?	Yes	.....	.....
• Supervision—Maintenance?	None	.....	.....

Write for Stacon Bulletin 50-1000. It contains complete information on the most sensitive, accurate, economical temperature regulator available . . . anywhere.

Farris Stacon Corp.

506 COMMERCIAL AVE. PALISADES PARK, N. J.

When inquiring check CP 4879 on handy form, pgs. 2-3

Here is the pair for clean, dry air . .

JOHNSON AFTERCOOLER

Used where moisture is vaporized by the heat of compression. Circulates cooling water around the line, condenses the oil and water vapor so Separator can remove them. Simple in design, highly efficient in performance.

SIZES FOR ALL NEEDS

JOHNSON SEPARATOR

Removes more than 99% of all water, dirt and oil from compressed air or steam. Combines the two best principles of separation—first allows air to expand slightly, then changes flow direction with the "Thousand Baffles". Model illustrated is the newest idea in separator design, with self-draining trap mechanism built right in.

WRITE FOR BULLETIN



The Johnson Corporation
826 Wood St., Three Rivers, Michigan

When inquiring check CP 4880 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

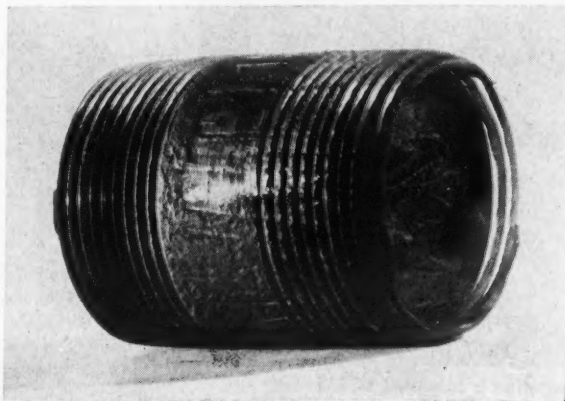
Maintenance costs cut 95 % when corrosion inhibitor is in steam lines . . .

volatile amine effective when recirculated because it vaporizes and condenses simultaneously with water

Problem: Corrosion in unit heaters and space heaters of a large midwestern malting plant was so severe that two men worked four to five hours every day to replace heating coils that had failed. This plant, using an average of 2,000,000 lb/day of steam purchased from the municipal power plant, has three-hundred 15'0" by 15'0" unit heaters and one-hundred standard-size room space heaters to hold the proper temperatures for the malting process.

Solution: A volatile, liquid amine corrosion inhibitor is fed into the steam main just before entry into the malting plant heaters. The material vaporizes and mixes with the steam, remaining in the vapor state until the steam condenses, at which time it condenses simultaneously.

Inhibitor acts in two ways: by neutralization and by surface adsorption. Upon condensing, it neutralizes the



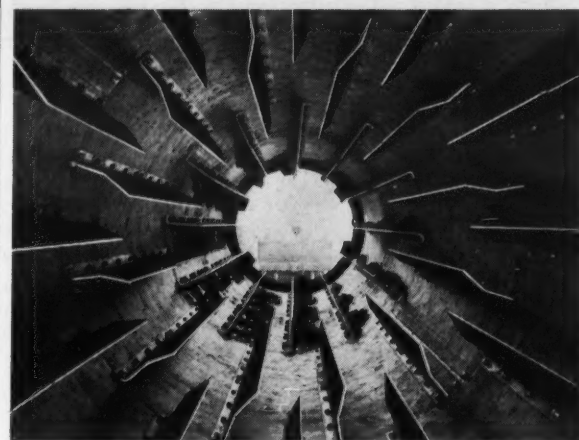
The thread in this nipple failed after only three weeks' service without corrosion inhibitor. Traces of both oxygen and CO₂ corrosion were found

condensate, thus minimizing attack on ferrous metals. It is adsorbed on metal surfaces, producing a protective film to polarize cathodically active points.

Results: Treatment has been in use for one year, and during that time a 95% reduction of maintenance has been achieved. The cost of replaced coils and other materials is not available, but percent reduction may be assumed to correspond with labor savings. Treatment cost varies between \$3 and \$4 per day, and is directly dependent on the amount of CO₂ present in the purchased steam.

An interesting secondary result is possible because of the inhibitor's ability to recirculate. Condensate from the malting plant returns to the municipal plant bearing the inhibitor, and the pH of water in the entire municipal steam system is materially raised. (Evaporation of the municipal plant is over 4,000,000 lb/day.)

Source: Characteristics and applications of No. 160 Series corrosion inhibitor are discussed in Bul 25X7582, issued by Water Conditioning Department, Allis-Chalmers Mfg. Co., Dept. CP, Milwaukee 1, Wis. . . or for more information check CP 4881 on handy form, pages 2 and 3.



You are looking at the interior of a Ruggles-Coles "XH" Rotary Dryer, built by Hardinge. Note the heavy chains, which can be added, to knock out sticky materials.

The "XH" type is particularly suited for continuous drying of materials when contamination is not a problem. When minimum contamination is wanted, the "XA" double-shell dryer is recommended. When completely indirect heat is required, the "XB" dryer is used.

Write for Hardinge Bulletin 16-D-13.

HARDINGE COMPANY, INCORPORATED

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When inquiring check CP 4882 on handy form, pgs. 2-3



PERFORMANCE—RE-ORDERS SAY "YES"

A Frantz Dry FERROFILTER

—the most efficient magnetic separator available for the separation of tramp iron from finely ground materials.

Repeat business demonstrates customer satisfaction better than any other endorsement. Judging by performance records and repeat orders, customers have discovered that the Frantz FERRO-FILTER is the answer to their iron removal problems.

Model 68V (Dry Ferrofilter)
For the removal of fine tramp iron from dry powders, granulated materials, grains and other foods.

Fed into the top, the material, with the help of a vibrator, flows, with an intermittent motion, in a zig-zag course over a set of magnetized edges, which catch, and hold the magnetic particles such as iron, rust, pipe scale, and magnetic minerals until such time as the run is completed and the current shut off.

FERROFILTERS for wet materials, in Gravity, Pipeline, or Underfeed types are also available.

For further information send for our illustrated Bulletin No. 46

S. G. Frantz Co., Inc.
P. O. Box 1138 Trenton 6, N. J.
Manufacturers of Permanent Magnet and Electromagnetic Separators

When inquiring check CP 4883 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS

Ceramics manufacturer slashes maintenance of kiln car bearings . . .

he employs Ucon oil containing colloidal graphite dispersion

Problem: All methods of lubricating bearings of kiln cars in The Industrial Ceramic Products, Inc., Columbus, Ohio, failed to give satisfactory results. The original method of lubrication consisted of removing axles and bearings from the wheels and cleaning them thoroughly every 18 months.

More recently, the cars had been jacked up at 6-month intervals, and the wheels turned for an hour by means of a motor and V-belt drive to loosen the carbon deposit. Bearings were flushed out with fuel oil or kerosene.

Solution: Company has recently started the practice of lubricating the bearings with a Ucon oil containing Acheson "dag" colloidal graphite dispersion No. 197. A small amount of this lubricant mixture is forced by air pressure into the bearings through an oil hole on each trip through the kiln.

Results: There is every indication that the previous inspection, maintenance and repair costs will be completely eliminated.

Cars can be pushed now with little effort; there are no hard-running cars as encountered previously. One man has pushed as many as 14 loaded cars at one time.

Source: Graphite dispersion is made by Acheson Colloids Corporation, Dept. CP, Port Huron, Mich. . . .or for more information check CP 4884 on handy form, pages 2 & 3.

How to cut cleaning time with steam, detergents

Two-page folder tells how steam-detergent cleaning saves time and labor in industrial maintenance operations. System involves 3 different actions: physical, dissolving, and chemical.

In addition to listing specific applications, folder supplies information on types of equipment to use and efficient working solutions. "Time Saved" is issued by Oakite Products, Inc., Dept. CP, 18F Thames St., New York 6, N. Y. When inquiring specify CP 4885 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 4886 . . . see information request blank between pages 2-3.



Here's SECURITY AGAINST OVERPRESSURE

Put BS&B SAFETY HEADS to work in your plant and you can forget the danger of overpressure. Here's why:

A SAFETY HEAD is simply two flanges with a rupture disc between. It's the disc that does the job . . . an engineered "weak spot" in your pressure system that bursts before your vessels do. It gives instant, pipe-size relief, and the hazard is over.

There's a SAFETY HEAD for your pressure problems . . . with or without safety valves, for corrosive viscous or super-heated materials. Put the question to our SAFETY HEAD engineers. They'll be glad to serve you. Write or wire today!

BLACK, SIVALLS & BRYSON, INC.
Adv. Dept. Rm. 28M 7502 East 12th Street
Kansas City 3, Missouri



SAFETY HEADS
for
Positive Pressure Protection

Products from Abundant Perlite May Conserve Materials Now on Critical List

**Lightweight, inorganic, buoyant products
have low k factor, electrical conductivity and
vapor adsorption**

USES: Can be used for reducing gloss, removing stickiness, modifying melting point, adding fire retardancy, control of body, increasing insulation value, adding bulk, increasing hardness, toughness and porosity, promoting surface roughness. Materials can be substituted for other products to decrease weight, improve dispersion, and add a mild abrasiveness.

Specially processed types are being used by the oil industry in drilling and cementing oil wells. Other industries are employing the materials as fillers, extenders, insulants, refractories, fire retardants, abrasives, etc.

Features: Available in abundance in most sections of the United States, the materials will be valuable as replacements for those in short supply but, of course, may also be applied in development of new products or processes.

Materials are insoluble in water and most acids, and contain no oxidizing elements. They have very low electrical conductivity and vapor adsorption. Specific heat is approximately 0.20 Btu/lb/°F, and k factor ranges from 0.22 to 0.35 Btu/sq ft/hr/°F/in. Due to the sealed voids, the materials are normally buoyant so that they float on water indefinitely. However, the degree of buoyancy can be regulated.

Description: Materials are made from perlite, a volcanic rock which, when heated quickly to a suitable

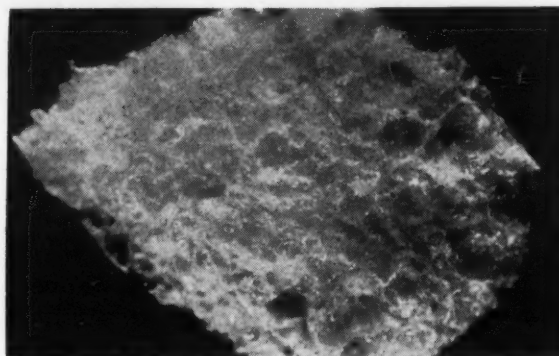
point in its softening range, expands to form lightweight, non-combustible, glass-like, irregularly shaped particles of cellular structure. Expansion of the rock is due to expansion of dissolved (magnetic) water upon heating, and it forms a series of cells or voids, sealed by microscopic but sturdy volcanic glass walls.

Pulverizing produces a dry, white aggregate or powder having a chemical composition high in combined silica with a small percentage of aluminum oxide and other elements, all inorganic. The pH is substantially neutral.

Products are manufactured to broad limits of particle size and density. Particle sizes range from about 1/4" down to 200 mesh in the form of sealed voids. Pulverized powder down to several microns is available. Apparent bulk density can be controlled from 4 to 20 lb/cu ft.

Products can be coated, treated and blended in a number of ways with various organic materials. As originally manufactured, they contain no oil or other substances to react with adhesives, coatings, mastics, binders, or similar materials.

Source: Great Lakes Carbon Corporation, Perlite Division, Dept. CP, 18 E. 48th St., New York 17, N. Y. . . . or for more information check CP 4887 on handy form, pages 2 and 3.



Photomicrograph (30X) of typical sealed void product made from perlite

**Because combustible solvents
are not used, coating eliminates
many hazards in handling**

USES: Vinyl latex finds applications in the paper, paint, and textile fields — serving both as a functional coating material and as a pigment binder.

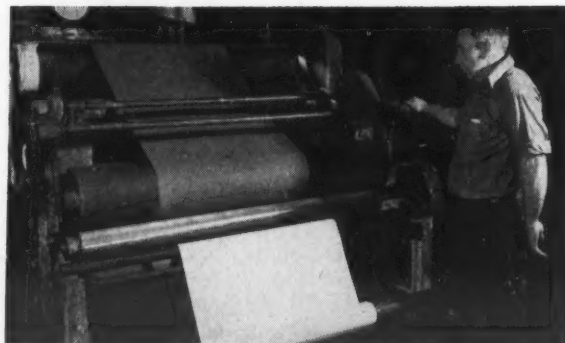
Major use is producing heat sealable, grease and moisture resistant papers for industrial and consumer food packaging fields. Material is recommended for box board coatings, leatherette finishes for such items as book covers, decorative box covers, correspondence folders, and also as a coating for cleanable shelf paper. Coating wallboard is another application.

Chemical and fire resistant paints can be formulated with this latex, where it serves as a pigment binder.

Uses in the textile field include impregnation and coating of duck for tents, awnings, and tarpaulins. Potential use is foreseen for shade cloth, coating for jute felt, and back sizing for carpeting.

Features: Resin in this latex is characterized by

Coating Paper and Textiles, Formulating Paints Intended Uses for Vinyl Latex



excellent heat and light stability, wide compatibility with modifying materials, and good stability to shipment, storage, and processing.

Description: Dow-Latex 744-B is not a film forming latex, and therefore modifying latices or resins must be added to obtain useful films. A wide range of modifiers can be used and, in general, this is readily accomplished with relatively inexpensive equipment. Modifiers, acting as temporary or permanent plasticizers, are added as water solutions or dispersions. Plasticizers

for the latex are classified as follows: synthetic latices such as Rhoplex FRN and Dow Latex 512-K. . . chemical and polymeric plasticizers such as Dow Plasticizer 5 and Santicizer 141 . . . and water miscible types such as carbitol acetate.

In the coating of paper, 744-B may be applied by any of the methods used in the industry for water based coatings — such as air knife coaters, brush coaters, roll

Coating duck with Dow-Latex 744-B imparts water resistant and fire retardant properties to the fabric. Elimination of hazards involved in handling combustible solvents is one highlight of coating

CHEMICAL PROCESSING

coaters, and knife or doctor coaters. Type of coater used depends on the viscosity of the coating color, the speed of coating desired, whether a one or two sided coating, and the type of finish required.

Source: Development of The Dow Chemical Company, Dept. CP, Midland, Mich. . . . or for more information check CP 4888 on handy form, pages 2 & 3.

Viscosity of 2% detergent sol'n is about 300 cp . . .

material one of series of nonionics showing promise as thickeners for soaps, cleaners

Uses: Series of nonionic detergents for thickening dilute solutions of other synthetic detergents and soaps. One member of the series, Ninol 1281, is being used in production of viscous liquid "Synsoaps" which are blends of potash soaps and synthetic, combining the desirable features of both types.

Other possible applications are as thickening and stabilizing agents for resin latex or emulsion paints, in detergent products such as clear or cream shampoos, and in dishwashing liquids and institutional cleaning compounds where higher viscosity is desired.

Features: Ninol 2012A is so effective that a 2% solution in distilled water has a viscosity of about 300 cp. This product maintains a fairly constant viscosity even on extensive dilution such as may be encountered in repackaging. Only small changes in viscosity occur on diluting from 50 to 5%.

Ninol 737 has the interesting property of becoming thicker on dilution with water. An 80% solution has viscosity of only 50 cp, while a 10% solution has one of 1000 cp.

Description: According to some recent work (published in a report, "High Viscosity Detergent Solutions," which is available from the manufacturer), these detergents can be used as thickeners in place of various gums which possess no detergent properties. These inert gums tend to mold in warm weather, often show incompatibility with detergent solutions, and sometimes leave white films if rinsing conditions are poor, such as in floor cleaning.

Source: Manufacturer is Ninol Laboratories, Dept. CP, 1719 S. Clinton St., Chicago 16, Ill. . . . or for more information check CP 4889 on handy form, pages 2 & 3.

Ammonium bicarbonate has pharmaceutical use . . .

product leaves no taint or residue; aeration reported as being excellent

Uses: Manufacture of pharmaceuticals. Can be used for making ammonia salts, as inflator in rubber production, and as neutralizer for ammonium sulfate prepared at gas works and coke ovens.

Features: Product leaves no residue or taint. Volatilization by heat and resultant aeration are reported as being excellent.

Description: Ammonium bicarbonate has an NH_3 content of 21.6%. It is a fine, white crystalline material available in 224 lb drums.

Source: Product of Chemical Manufacturing Co., Inc., Dept. CP, 21 West St., New York 6, N. Y. . . . or for more information check CP 4890 on handy form, pages 2 and 3.

JUNE, 1954

ARMOUR Chemical Division

Arneel Plasticizers Available for Prompt Shipment

Defense requirements have created shortages of many primary plasticizers. Fortunately, however, with the expanded facilities of their new plant, the Armour Chemical Division can offer Arneel Plasticizer for prompt shipment.

"Arneel" is the Armour trade-name for a series of 11 high molecular weight aliphatic nitriles having alkyl chain lengths of 8 to 18 carbon atoms. They are chemically stable nitrogen containing compounds represented by the general formula RCN where R is a normal aliphatic group.

Arneel Plasticizer is being used as an extender and in many cases as a primary plasticizer particularly where low temperature flexibility is desired. The Arneels are excellent softening agents for several

synthetic rubbers and elastoprenes and synthetic rubber-like elastics or elastoplastics. Arneels are particularly efficient softeners for acrylonitrile copolymers, polyvinyl and polystyrene derivatives. For certain polymers, 25 to 50 per cent less plasticizer is required to obtain the desired characteristics. Furthermore, the efficiency experienced with Arneel softeners permits compounders to carry a high load of carbon black or other reinforcing agent and thus reduce materially the cost of the finished product.

The Arneels offered commercially as plasticizers are readily available and can be obtained in tank car quantities. For additional information, write for your free copy of the booklet "The Arneels as Plasticizers."

New Oleic Acids Improve Products

Low Temperature Solvent Crystallized Oleic Acids, introduced recently by the Armour Chemical Division, are already finding important applications because of their unique combination of properties. Not only does this process—exclusive with Armour—produce the highest quality and most uniform Red Oils and Oleic Acids available, but it uncovers many advantages not found in ordinary distilled or pressed products. It has lower saturated acid content, greater stability, and is ester-free and almost odorless.

In the manufacture of latex foam rubber, for instance, potassium oleate is used as a foam stabilizer. Here good odor is important in the soap product so that no clinging rancidity is present in the final product. Likewise, low unsaponifiable content is important if a uniform "blow" is to be obtained. Good mechanical and uniform chemical stability are also highly desirable if uniform gelation

is to be controlled. All of these properties are inherent in Armour's Low Temperature Solvent Crystallized products.

Recently, many foundries have turned to resin binders as a means of producing uniform sand cores. Here low-titer red oil dissolved in fuel oil or kerosene acts as a positive mold release from core boxes. Thus the time cycle of "loading" is reduced and rejections are consequently negligible. And, at the same time, mold build-up is greatly lessened.

The above are only two examples of where the superior qualities of Low Temperature Solvent Crystallized Oleic Acids have improved formulations. If you are dissatisfied with the products you are now using, or if you are looking for a safe and dependable source of supply for oils and fatty acids, it will pay you to investigate Armour's complete line of Oleic Acids and Red Oils. Specifications are listed in the chart below.

Product	Titer		Iodine		Acid		Sap.		Unsapon-		Color
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Distilled Red Oil (8°-11° Titer)	8°C	11°C	90	95	193	200	193	200	—	3%	6.4R-24Y (1° Lov.)
White Oleic Acid (8°-11° Titer)	8°C	11°C	90	95	195	201	195	201	—	2%	1.5R-15Y (5¼° Lov.)
Distilled Red Oil (Low Titer)	—	5°C	90	95	193	200	193	200	—	3%	6.4R-24Y (1° Lov.)
White Oleic Acid (Low Titer)	—	5°C	90	95	195	201	195	201	—	2%	1.5R-15Y (5¼° Lov.)

All of these products are available for prompt shipment in 55-gallon drums or in aluminum tank cars. Write today for prices, samples and additional information.

Fatty Acids Long-Chain Fatty Acid Derivatives Industrial Oils

Commercial Grades of Neatsfoot Oil Available for Prompt Shipment

In the processing of textiles and leather, neatsfoot oil plays an important role. It imparts a quality that no substitute cheaper oils can offer. For these industries, Armour Chemical Division produces several grades of neatsfoot oils—with the same degree of uniformity as lard oils. Here are the specifications of three of these oils:

Prime Neatsfoot Oil

F.F.A. 5% Max.
Pour Point 40-45°F
Color 3 NPA Max.

Ideal for use in knitting mills, this oil washes out readily and imparts a fine quality to the finished product.

Extra Neatsfoot Oil

F.F.A. 10% Max.
Pour Point 40-45°F
Color 4½ NPA Max.

No. 1 Neatsfoot Oil

F.F.A. 15% Max.
Pour Point 45-50°F
Color 5 NPA Max.

Both of the above oils are widely used as leather preservatives and softeners—also for rough textile work.

Recommended Reading

Write for the authoritative booklet "The Handling, Sampling and Testing of Fatty Acids" covering: Shipping and storing fatty acids; process equipment; standard sampling methods and equipment; testing fatty acids; tests commonly used and their meanings. Available without charge.

Mail this Coupon

Please send additional information on

• _____
• _____

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

ARMOUR Chemical Division

Armour and Company
1351 W. 31st St., Chicago 9, Ill.

When inquiring check CP 4891 on handy form, pgs. 2-3

*"Our Faith in the Quaternaries,
I Feel, Has Been
More Than Justified"*

Excerpt from a paper presented at the 27th Annual Meeting of the Chemical Specialties Manufacturers Association in December, 1950, by Henry Fleisher, Bureau of Ships, Department of the Navy. This paper was included in the Official Proceedings, Reports and Addresses of this meeting, published in February, 1951, in a special issue of "Soap & Sanitary Chemicals."

As for the disinfectants, many of you know that the Navy has placed considerable faith in the quaternary disinfectants. From their first inception and introduction as a commercial product, the Navy recognized in these materials the solution to a great number of their sanitization problems, and promulgated the pioneer specification for their purchase. I do not hesitate to say that these materials have played an important role in diminishing the spread of disease and infection in Naval service, with attendant economies in basic costs. Our faith in the quaternaries, I feel, has been more than justified.

**ONYX BTC* ... Alkyl Dimethyl
Benzyl Ammonium Chloride...**
**is one of the quaternaries on
which the confidence expressed
in this quotation is based.**

*Trade Mark Reg. U.S. Pat. Off.

Write for the BTC
book for the story
and technical facts
on this dependable
quaternary ammon-
ium salt.



onyx

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When inquiring check CP 4892 on handy form, pgs. 2-3.

Page 24

Anion Exchange Resins Are Interesting Reaction Products of Triamine

Used for preparation of dyestuffs, rubber chemicals, surface-active agents, pharmaceuticals

USES: Potential applications for 3,3'-iminobispropylamine include synthesis of dyestuffs, rubber chemicals, surface-active agents, water purification chemicals, pharmaceuticals, and as an alkaline catalyst for resin reactions.

Suggested as a replacement for or supplement to other polyamines.

Features: By virtue of its three basic groups, this triamine readily reacts with epichlorohydrin and similar compounds to produce resins which are suited for anion exchange. These have good color and no odor. Best of these products have a high capacity based on the use of dilute hydrochloric acid as the exhausting solution, and they also have a good ratio between capacity and density. Resins may find use in the removal of acid from water, the removal of acid from alcoholic solutions, the purification of sugar juices, the removal of acid from aqueous formaldehyde solutions, etc. Extraction of anions from gases or for absorbing certain plant nutrients extends use.

Description: The physical properties of 3,3'-iminobispropylamine (99.4% pure) are tabulated in the accompanying table in the next column.

It is miscible with most common solvents such as water, ethanol, propanol, ether, benzene, chloroform, carbon tetrachloride, acetone, and ethyl acetate at 25°C. Two percent solubility is exhibited in heptane. It is reported to be more stable to light and to air oxidation than most propylamines. Samples stored in closed vessels, each containing one of two types of steel and in the presence

**Offers bodied tall oil for
coating formulations . . .**

good pigment wetting, compatible with oils, vehicles

Uses: Recommended as a grinding oil and kettle oil for varnish cooking. Can be used as a checking oil for varnishes and as a modifier for flat, semi-gloss, and full-gloss systems. Formulations include interior maintenance paints, screen enamels, stains, metal paints, wood preservatives, roof paints, barn paints, toy enamels, metal and wood primers, and fence paints.

Features: Possesses good pigment wetting properties, is compatible with commonly used oils and vehicles, and affords a good means for hardening-up soft oil systems.

3,3'-IMINOBISSOPROPYLAMINE

Appearance	Colorless Liquid
Molecular Weight (theoretical)	131.23
Freezing Point	-14.5°C
Boiling Point	151°C @ 50 mm Hg*
Flash Point (Tag closed cup)	>80°C
Density	0.9237 gm/cc @ 25°C
Viscosity	7.45 cp @ 25°C

*Decomposes above 151°F.

of diffuse daylight, remained water-white even after 3 years.

Undergoes the reactions common to aliphatic and primary and secondary amines. Salt formation proceeds easily, three moles of acid are taken up per mole of amine.

Reaction with epichlorohydrin is an example of the reactivity and utility of the amine. Condensation with or without the addition of sodium hydroxide proceeds in two stages. The first, or cold stage, gives a linear polymer which in the second stage, and under the influence of heat, gels to a compact, cross-linked resin. These products can be used as ion exchange resins.

Source: Development of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 4893 on handy form, pages 2 and 3.

May be used in place of cold cut resin solutions with advantages of lower cost.

Description: "Ardex PE" is a pentaerythritol ester of refined tall oil, conforming to the following specifications:

Saponification Number	135-150
Iodine Number	135-150
Acid Number	10-20
Color (Gardner)	10-12
Viscosity (G-H)	Z5-Z6
Weight per Gallon, lb	8.31

In formulation work, Ardex PE should be considered as a short to medium oil length varnish due to the rosin content of the base tall oil. With normal lead-cobalt

CHEMICAL PROCESSING

driers, it dries overnight to a firm, tack-free film. Holding this bodied oil for extended periods of time at elevated temperatures is not recommended from the standpoint of color and acid number.

Specific formulations are being developed and checked. Information regarding these can be obtained from maker.

Source: Development of Archer-Daniels-Midland Company, Dept. CP, Minneapolis 2, Minn. . . or for more information check CP 4894 on handy form, pages 2 and 3.

Cotton work clothing wouldn't hold-out for 8-hour shift; dynel good for 5 months . . .

fumes and acid and alkali splashes are prevalent; processor found clothing that can 'take it'

Problem: Conventional cotton work clothing worn by operators in the aluminum chloride and zirconium and titanium tetrachloride departments at Stauffer Chemical Company often did not last even a single 8-hour shift due to fumes and acid and alkali splashes. Outlay for clothing replacement was phenomenally high, and in lieu of the present anticipated shortages of most textile items, Stauffer was compelled to look for clothing made from more substantial fabric.

Solution: Hearing about the chemical resistance of industrial clothing made from dynel and called Chem



Comparative test of a cotton (left) and a dynel shirt — both were placed in a 60% solution of H_2SO_4 and agitated for 2 minutes, then washed and dried. Look at the results

Wear, Stauffer tried some out with the intent of comparing the service life with the cotton clothing they had been using.

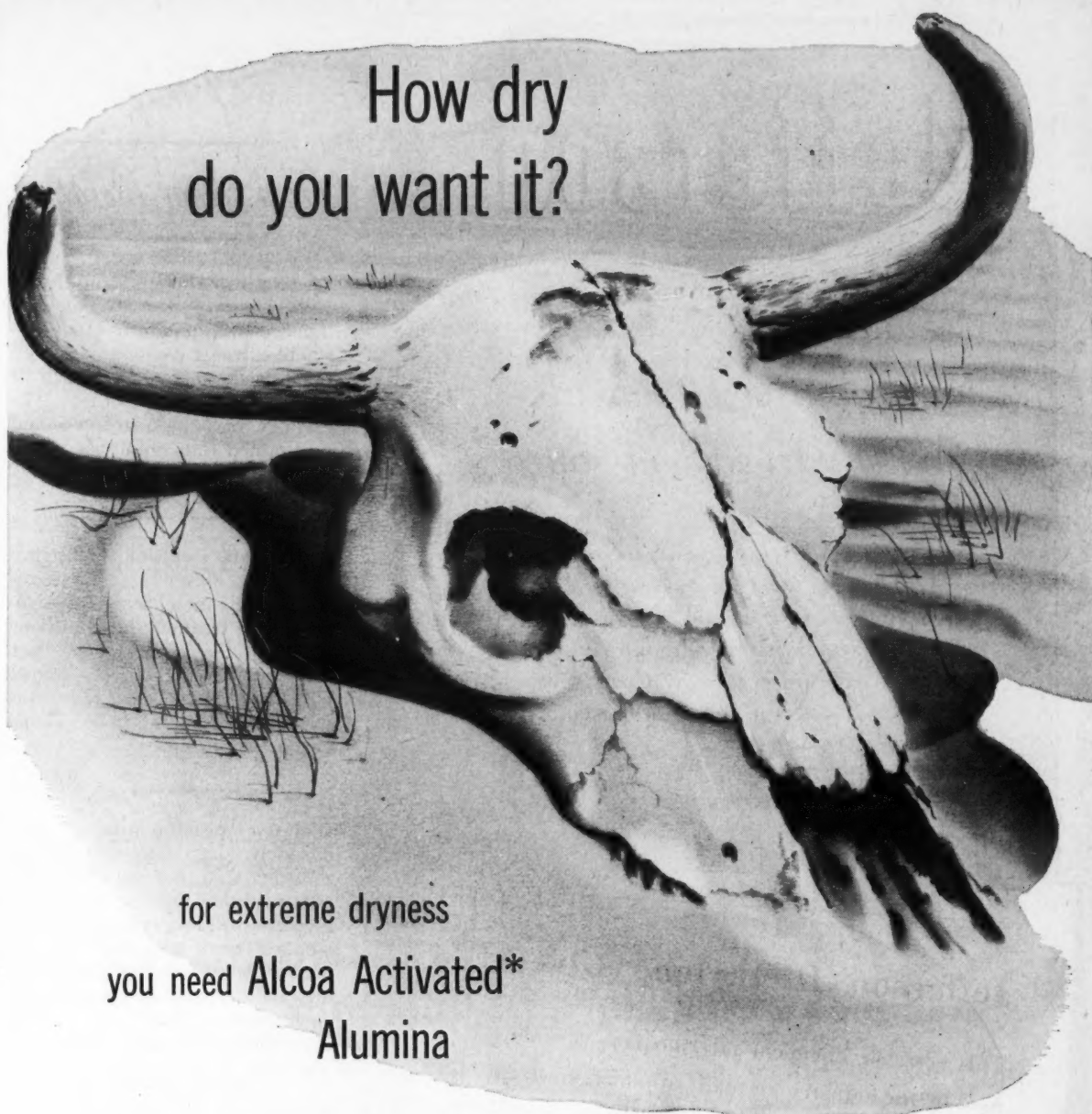
Clothing looks and feels like fine flannel; it remains acid and caustic resistant permanently. It is not affected by repeated harsh launderings. Drying after laundering is very rapid, and little or no ironing is required. Wearing qualities are excellent. Chem Wear sheds dirt, grease, and wax; it will not support combustion.

Results: Garments of Chem Wear last several months now without appreciable signs of wear. Replacement savings, says Stauffer, "have more than exceeded our expectations."

Source: Dynel (a staple fiber made by Union Carbide and Carbon Corp.) is being made into Chem Wear matching shirts and work trousers and coveralls by Chem Wear, Inc., Dept. CP, 740 Broadway, New York, N. Y. . . or for more information check CP 4895 on handy form, pages 2 and 3.

JUNE, 1951

How dry
do you want it?



for extreme dryness
you need Alcoa Activated*
Alumina

If your business calls for the dehydration of liquids, vapors or gases, you'll want to be familiar with ALCOA Activated Alumina. It is one of the most effective and efficient desiccants you can buy. Dew points as low as minus 100° F.—and even lower—can be obtained, and under normal conditions, ALCOA Activated Alumina can be used for an almost indefinite number of drying cycles.

ALCOA Activated Alumina is a commercially pure, highly inert adsorbent. It has high resistance to crushing, shock and abrasion . . . will not swell, soften or disintegrate even when immersed in water . . . is non-toxic . . . non-corrosive . . . practically iron-free. And its relatively low initial cost makes it extremely economical to use.

It is properties such as these that give ALCOA Activated Alumina its wide acceptance as an outstanding drying

agent. Its desiccating properties are used in the chemical, food, pharmaceutical and petroleum industries, in air conditioning and for the maintenance of oils.

Whatever your dehydration problem, you can obtain the desired dryness and maintain it continuously with ALCOA Activated Alumina. It will pay you to investigate. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606F Gulf Building, Pittsburgh 19, Pa.

*Reg. T. M., Aluminum Co. of America

Alcoa Chemicals



ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS • ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 4896 on handy form, pgs. 2-3

Jefferson

*...hallmark of
high quality chemicals
from hydrocarbon sources*

National defense requirements have created emergency demands for Jefferson chemicals. Although our facilities are being expanded as rapidly as possible to cope with these requirements, many of our chemicals are currently in short supply. We nevertheless welcome your inquiries and will make every effort to serve you.

Jefferson Diethylene Glycol

This versatile chemical intermediate is widely used by the industry for many applications, from formulating brake fluids to manufacturing resins. For further details, write to Department B.

Jefferson Chemical Company, Inc.

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ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

Briefs

From recent literature

Casting resins—employing diethylene glycol as a component, give light colored, tough, hard and resilient castings. These unsaturated polyester resins are hardened at relatively low temperatures. The castings may be machined and postformed into simple shapes at temperatures around 100° C.

Oil-in-water emulsions such as are sometimes encountered in petroleum production, have been resolved by treating the emulsions with a water dispersible product of the reaction of diethylene glycol with an aliphatic diacid or ester having at least eight carbon atoms in the chain.

Water-set printing inks are prepared by dissolving the product resulting from heating rosin with beta naphthol pitch in diethylene glycol and adding appropriate pigments. These inks exhibit good press stability, good flow and printing qualities, and are substantially non-corrosive. They set quickly upon the application of water.

Plasticizers are formed by reaction of essentially theoretical amounts of diethylene glycol bis (chloroformate) with thiophenol in the presence of a basic reagent. The product is a high-boiling, viscous liquid. It is found to be particularly effective as a plasticizer for synthetic rubber compositions, resins and plastics.

These developments are abstracted from recent publications or U. S. patents. They may suggest other applications of Jefferson Diethylene Glycol in your products or processes.

MATERIALS

Adding resin to pulp develops rapid wet strength in paper as it leaves machine . . .

use of resin requires no special mixing or equipment

Uses: Pulp additive for production of wet-strength papers.

Features: Resin requires no special mixing procedures or equipment — dilutes readily with water and is then ready to add to pulp. This contrasts resins for fast wet strength that have heretofore required acid treatment and aging in special equipment before use. Wet tensile strength develops rapidly after the paper leaves the paper machine, regardless of resin concentration.

Performs well on all types of pulp — bleached and unbleached kraft and sulfite — with no sensitivity to the sulfate ion concentration in the water. Stability affords storage in the same manner as conventional wet strength resins.

Description: Amount of "Uformite 700" added to the pulp depends on the amount of wet strength required and on conditions in a given mill. In general, from 0.15 to 3.00% resin solids, based on pulp solids, is required.

Supplied as 30% solids, it may be metered to the pulp system at any convenient solids content. Temperature of dilution is not critical, neither is the point at which it should be added to the pulp system. In order of preference, suggested points are at the consistency regulator, fan pump, discharge of the last jordan, and at the beater.

Resin produces the maximum wet strength when pH can be reduced to 4.5 or below, but satisfactory results can be obtained at pH 5.0.

Rosin size in small amounts actually appears to enhance the wet strength which Uformite 700 develops. With bleached kraft, as little as 0.125% rosin solids, based on pulp solids, has further increased wet tensile strength values about 5%. Presence of normal amounts of rosin used in paper making may aid wet strength values and will have no harmful effect on the resin.

Physical properties of Uformite 700 are tabulated below:

Solids Content	30%
Viscosity (Gardner-Holdt)	A to B
pH	8 to 9
Color (varnish scale)	Light Amber
Appearance	Clear Solution

Source: Development of the Resinous Products Division of Rohm & Haas Company, Dept. CP, Washington Square, Philadelphia, Pa. . . or for more information check CP 4898 on handy form, pages 2 & 3.

Single coat protects metals at temps to 1900°F . . .

four non-toxic coatings repel water, resist salt water, withstand temperature of minus 60°F

Uses: Preventing oxidation of metal surfaces at high temperatures such as found in steel mill annealing furnaces, boilers, superheaters, etc. Can be used as fire resistant coating on aluminum, steel and other metals used in partitions, air ducts and ammunition handling equipment.

Features: One of these four coatings — FG #1500 — can be used at temperatures to 1900°F. All are non-

CHEMICAL PROCESSING

When inquiring check CP 4897 on handy form, pgs. 2-3

MATERIALS

toxic, water repellent, resistant to salt water, and will not flash. They withstand intense vibration, reasonable distortion and temperatures as low as minus 60°F.

Description: Series of four Fire-Gard coatings for metals covers temperature range from below 500°F up to 1900°F. Standard colors are aluminum, white and gray; other colors are special. One-coat coverage is 400 to 500 sq ft/gal. Intended for interior and exterior use.

Surface should be wire brushed to remove rust, scale and dirt. All soot, grease, oil and oil paint must be removed by steaming or solvent cleaning. Before applying Fire-Gard, surface must be thoroughly dried. The coating is brushed, sprayed or dipped on moderately warm, but not hot surface. In most cases, one coat is sufficient. If second coat is desired, first coat should be air dried at least 12 hours before second application.

When baked on metal at 225°F and higher, material forms fused metal coating that resists most solvents.

Source: Made by Fire-Gard Incorporated, Dept. CP, 1424-K Street, N. W., Washington 5, D. C. . . or for more information check CP 4899 on handy form, pages 2 and 3.

Imparts rust preventing qualities to metal-protecting oils . . .

protected sand blasted steel panels are not attacked during 30-day exposure to salt spray

Uses: Additive for preparation of rust preventive oils which protect metals against salt spray. Such oils have the advantage of being easily applied and removed.

Features: Sand blasted panels covered with oil containing 40% Alox L-1673 have shown no failure for as long as 30 days of exposure to salt spray. Smaller percentages of the material, of course, provide less protection. A 10% solution in oil, for example, protects a sand blasted panel for five days.

Sand blasted steel specimens coated with various blends of 10 to 40% by weight have remained rust free for longer than 100 hours in the Synthetic Sea Water Immersion Test. Early humidity cabinet data indicate that rust free periods may be longer than three months when 30% Alox L-1673 is used in oils of high viscosity.

No attack on copper is observed after immersion for four hours at 212°F in oil solutions.

Description: Material is a dark brown, solid mixture of lead and sodium soaps, melting at 120°F (ASTM-D-127-49). Its specific gravity at 160°F is 0.985. Flash point is 378°F, fire point 420°F. It is soluble in naphthenic oils, soluble in some paraffinic oils, insoluble in water, soluble in carbon tetrachloride, and soluble to a large degree in petroleum solvents. Combination of active components in L-1673 provides polar, wetting and blending actions and modifies the physical properties of the oil film itself to make it more impervious to salt spray and humid atmosphere.

Solutions can be prepared by stirring the melted product with hot oil. It is often desirable to heat the mixture to 225°F, thus assuring complete removal of water if it is present in the base oil.

Source: Product of Alox Corporation, Dept. CP, Buffalo Ave. & Iroquois St., Niagara Falls, N. Y. . . or for more information check CP 4900 on handy form, pages 2 and 3.

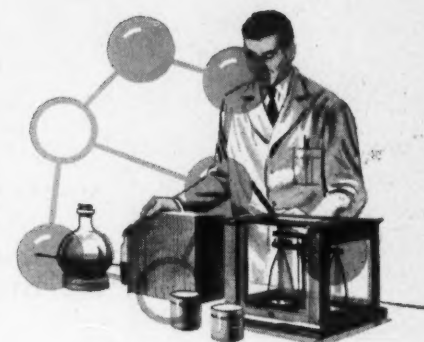
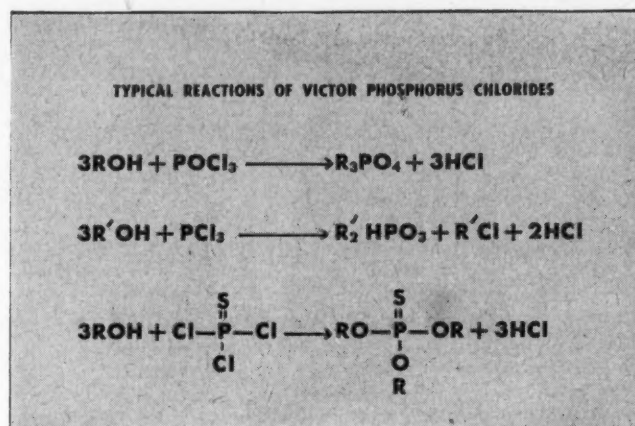
JUNE, 1951



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What special problem do you have? What properties do you seek in a chemical? It may well be that a Victor phosphate, formate, oxalate, or one of the many derivatives of these versatile chemicals will provide the answer.

For example, the three important Victor phosphorus chlorides mentioned here have already extended their usefulness by solving specific problems in the production of phar-

maceuticals, plasticizers, lacquers, and chemicals.

Bring your problem to Victor. We may already have the answer or be able to get it for you. There is no obligation for this "service to industry." For quotations, additional information, or experimental samples of Victor phosphorus oxychloride, phosphorus thiochloride, and phosphorus trichloride, write today . . . on your company letterhead.

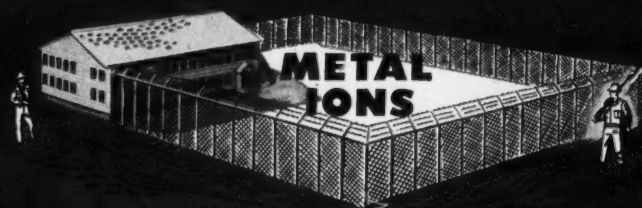


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4570 Ardine Street, South Gate, California

When inquiring check CP 4901 on handy form, pgs. 2-3

For your worst enemies



a CONCENTRATION CAMP!

The **NULLAPONS**

nullify

SCUM
WASTE
RANCIDITY
CLOUDINESS
DISCOLORATION

by sequestration

Magnesium, calcium (lime), iron, copper, zinc, nickel, chromium and lead . . . these are the more common, *interfering metals*—interfering with processes in which water is involved, impairing the quality of the products thus processed.

Through sequestration—with the help of an Antara Nullapon—the action of these metal ions can now be nullified. To all practical purposes, they are locked up in an inert complex.

The applications thus far established include: softeners for hard water; clarifiers for liquid soaps and sham-

poos; antioxidants for fats, oils, soaps and softeners; foam builders for soaps; sequestrants for polyvalent metal ions; plasticizers for (vulcanized) rubbers; solubilizers for dyes and pigments; dyeing assistants for metal-sensitive dyes, hard-water-sensitive vat dyes and naphthol dyeings; removal of lime soap from textiles; removal of metals and/or metal stains from fabrics and leather.

For Technical Bulletin—and for information regarding our new test kits for determining water hardness—we invite your inquiry, addressed to Department 72.

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IN CANADA: Chemical Developments of Canada Limited, Leaside, Toronto 17

When inquiring check CP 4902 on handy form, pgs. 2-3

MATERIALS

Research lots of sulfone being offered for investigation . . .

3,3' diamino 4,4' dihydroxy diphenyl sulfone plays role of reactive intermediate in organic syntheses

Uses: Suggested as a dye intermediate and as an intermediate for various organic syntheses.

Features: Being offered in research quantities.

Description: 3,3' Diamino 4,4' dihydroxy diphenyl sulfone has the formula $C_{12}H_{12}O_4N_2S$, is dark-brown to green powder, and has a melting point of 220-223°C. It assays 94.8% (nitrite titration), 99.4% (Dumas nitrogen). It forms the azo oxide when reacted with $i-C_6H_4NO_2$, couples with N-aryl substituted J acids and with pyrazolones.

Source: Development of the Merrimac Division of the Monsanto Chemical Company, Dept. CP, Everett Station, Boston 49, Mass. . . . or for more information check CP 4903 on handy form, pages 2 and 3.

Make high-purity thioglycolic acid by vacuum distillation . . .

product is very versatile due to two active groups and low molecular weight

Uses: Being used in the cosmetics industry as a reducing agent. Promising applications for the acid's esters are as modifiers in polymerization, as flotation agents and antioxidants. Other promising uses for the acid and its esters are as an analytical reagent, and in rubber reclaiming and preparation of lubricants, pharmaceuticals, fungicides, insecticides and bactericides.

Features: Product is vacuum distilled and contains only very minute quantities of contaminants. There are no solvents or residual solvent odors present in the material. Acid is extremely versatile due to the presence of two active groups and a low molecular weight.

Description: Thiovanic acid, a vacuum distilled thioglycolic acid, has the empirical formula $HSCH_2COOH$. It boils at 96°C at 5mm, and melts at -16.5°C. Specific gravity at 20°C is 1.325, dissociation constant at 25°C is 2.1×10^{-4} , normal oxidation potential at 25°C is 0.27 volts, and heat of combustion is 346.3 kg-cal/mol.

Specifications of the purified material are:

$HSCH_2COOH$, %	68-72
Maximum Fe, ppm	1.0
Maximum Cu, ppm	1.0
Maximum ash, %	0.05
Color, APHA	Water white
Other organic acids, %	Less than 2

The acid is miscible with water, alcohol, ether, benzene and chloroform.

A 96-99% Thiovanic acid is also available commercially. However, stocks are not carried because at this concentration the product tends to form thioglycolide upon standing. The ammonium salt is in commercial production and other salts can be made upon request. Technical grades of the acid to meet individual requirements of special strengths or qualities are made on special order.

Source: Product of Evans Chemetics, Inc., Dept. CP, 250 E. 43rd St., New York 17, N. Y. . . . or for more information check CP 4904 on handy form, pages 2 and 3.

MATERIALS

Fine form of silica thickens greases . . .

silica greases resist water, heat and mechanical breakdown

Uses: For thickening greases.

Features: In the laboratory, greases thickened with GS-199S silica stood up well in tests that produced punishment comparable to that inflicted on wheel bearings and their lubricant in a truck driven in a tight turn at 50 mph for 10,000 miles.

Description: Finely divided form of silica, derived from sand, consists of particles less than a millionth of an inch in diameter. It is specially treated so that it floats on water. Silica grease, according to experiments conducted thus far, resists mechanical breakdown and high temperatures.

Source: E. I. Du Pont de Nemours and Company (Inc.), Dept. CP, Wilmington 98, Del. . . . or for more information check CP 4905 'on handy form, pages 2 and 3.

Tape meets Gov't. specs for sealing V3 and W cartons . . .

used over labels, it keeps them clear and readable

Uses: Tape is Government-approved for specification No. JAN-P-127, Type 3 & 4, Grade B & C, for sealing V3 cartons . . . and for specification No. ANT-12A-T2, GA & B, for sealing W cartons.

Intended for sealing a carton's interliner and outer seams, and for covering and protecting carton labels.

Features: Resistant to water, shocks, and rough handling. Adhesion to paper is reported as excellent — holding tight under humid, dry, hot, or freezing weather conditions.

Description: "Scotch" brand acetate fibre tape No. 711 is made in widths from 1/4 to 6", with wider widths available on special order. Rolls are 72-yard. Tape is transparent and 6 mils thick.

Source: Development of the Minnesota Mining and Manufacturing Company, Dept. CP, 900 Fauquier St., St. Paul 6, Minn. . . . or for more information check CP 4906 'on handy form, pages 2 and 3.

For more information on product at right, specify CP 4907 . . . see information request blank between pages 2-3.

let **WITCO-MADE** products

HELP MAKE YOUR PRODUCT BETTER

Witco's long line of basic materials for the chemical industry can be more valuable than ever, now that shortages are prevalent.

Why not look over this wide variety of Witco products? There's a good chance that—like other manufacturers—you will find some of Witco's available materials can replace hard-to-get items in your formulation. And better still—your product might be improved because of the change.

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Octoic Acid Driers

Lead • Cobalt • Calcium

Manganese • Zinc

Witall Driers (Tall Oil)

Lead • Cobalt • Manganese

Lead Resinate

Lead Oleate

Manganese Oleate

Metallic Stearates

Aluminum

Barium

Cadmium

Calcium

Lead

Lithium

Magnesium

Strontium

Zinc

M. R. (Hard Hydrocarbon)

Monty Wax

Rubber Compounding Ingredients

Sunolite (Anti-Sunchecking Wax)

Vinyl Stabilizers

Witcarbs

Witcotes

MATERIALS

Painted windows cut glare, keep interior cooler . . .

paint film prevents discoloration of fabrics, papers

Uses: Applied on glass, paint reduces glare and heat transmission.

Features: Textile plants and paper mills find that the paint reduces fading and discoloration of fabrics and papers. Refrigerated and air conditioned buildings are able to maintain cooler interiors at lower costs when window areas are coated.

Description: Sunshade Blue is a translucent glass paint that forms a permanent bond with glass. It dries rapidly to make a weather-proof frosted coating, and may be applied by brush or spray. The soft blue color is reported to be relaxing and to relieve eyestrain and tension in workers.

Source: Development of Rex Supply Company, Dept. CP, 142 S. Highland Ave., Ossining, N. Y. . . or for more information check CP 4908 on handy form, pages 2 and 3.

Greater strength for its weight than any fabric known, states report . . .

resists water, mildew, flames, acids, alkalis, oils, etc.

Uses: Fabric for use in making articles that must resist water, mildew, flames, acids, alkalis, and oils. Being used for fabrication of tarpaulins, exposure suits, raincoats, movable shelters, equipment covers, etc.

Features: Light weight, high tear and tensile strength are reported.

Description: "Fiberthin" fabric is a specially woven nylon fiber base coated on both sides with a plastic compound. Manufacturer reports that it has greater strength for its weight than any other fabric. It weighs merely 5 oz/sq yd and has a tear strength of 15 to 22 lb and a tensile strength of 150 to 180 lb.

Source: Fiberthin is a development of the United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . or for more information check CP 4909 on handy form, pages 2 and 3.

Protects metal, wood, concrete from the corrosive action of acids, alkalis . . .

thermosetting coating serviceable at temps up to 150°F

Uses: Alkali and acid resistant coating for metal, concrete, and wood surfaces. Finding extensive application in the steel, electroplating and chemical processing fields. Not recommended for continuous contact with corrosives.

Features: Coated surfaces are resistant to splash and fumes from water solutions of non-oxidizing acids, salts, alkalis, and most organic solvents at temperatures up to 150°F.

Description: "Alkaloy 550" forms a thermosetting type coating that cures through chemical change. All surfaces require priming — primer being freshly compounded at the time of use by adding 1 part accelerator to 3 parts of un compounded primer, followed by mixing.



Ortho-nitrobiphenyl, low-cost plasticizer, is available now

In this day of "tight" plasticizer supplies, Monsanto Ortho-nitrobiphenyl (ONB) may be the means of solving several of your problems. A low-cost, primary plasticizer, ortho-nitrobiphenyl (also known as ortho-nitrodiphenyl) is compatible with a wide range of materials. And it is available . . . in quantity . . . now!

Ortho-nitrobiphenyl is compatible with the cellulose esters and ethers, polyvinyl chloride, polyvinyl butyral, polyvinyl acetate, styrene, rosin and rosin esters, modified phenolic resins, oil-soluble alkyd resins and vegetable oils. This wide compatibility, plus its low hydrolysis rate and low price, makes ONB an unusually attractive plasticizer.

Most resins, both natural and synthetic, can be plasticized with ONB. The amount of required plasticizer varies with the resins and the use the finished product is to be put to. The volatility of ortho-nitrobiphenyl is less than diethyl phthalate and greater than dibutyl phthalate.

FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information which may be helpful to you. This issue discusses:

Intermediates
Hydraulic Fluid

Plasticizer
Detergents

Additional information on any of these subjects will be provided by any Monsanto Sales Office or in response to your request by coupon or letter.

In addition to being an efficient, economical plasticizer, ONB imparts fungicidal properties to textiles coated with ONB-plasticized nitrocellulose, polyvinyl acetate, polyvinyl formal, polyvinyl butyral, cellulose acetate, Vinylite VYHH and styrene.

Ortho-nitrobiphenyl is readily soluble in carbon tetrachloride, mineral spirits, pine oil, turpentine, benzene, acetone, glacial acetic acid and perchlorethylene. It is a good solvent.

For further information on Monsanto Ortho-nitrobiphenyl, contact the nearest Monsanto Sales Office or mail the coupon.

Send for new catalog on Monsanto Intermediates. It contains technical information on more than a half-hundred important chemicals, including ortho-nitrobiphenyl. Mail the coupon for your free copy.



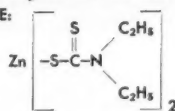
Research Chemists' Corner

You may find something new here

The three Monsanto chemicals described here are worth exploring for possibilities in developing and improving products . . . in replacing all or part of scarce materials. If you'd like to experiment with them, mail the coupon for samples which will be supplied to you without cost or obligation.

Zinc diethyldithiocarbamate

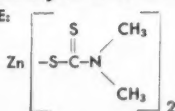
STRUCTURE:



Appearance: White powder.
Specific Gravity: 1.44 at 25° C.
Melting Point: 173° C. min.
Fineness: 99.5% min. thru 200-mesh.
Solubility: Soluble in dilute caustic, carbon disulfide, benzene and chloroform.
Heat Loss: 0.5% max.

Zinc dimethyldithiocarbamate

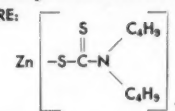
STRUCTURE:



Appearance: White powder.
Specific Gravity: 1.66 at 25° C.
Melting Point: 248° C. min.
Fineness: 99.5% min. thru 200-mesh.
Solubility: Soluble in dilute caustic, carbon disulfide, benzene and chloroform.
Heat Loss: 0.5% max.

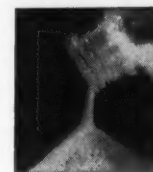
Zinc dibutyldithiocarbamate

STRUCTURE:



Appearance: Cream-colored powder.
Specific Gravity: 1.25 at 25° C.
Melting Point: 102° C. min.
Fineness: 99.5% thru 200-mesh.
Solubility: Soluble in carbon disulfide, benzene, chloroform and gasoline.
Heat Loss: 0.5% max.

Send for booklet giving technical data on 30 chemicals that offer possibilities for further research. The coupon is for your convenience.



Dust in dry detergent compounds is controlled by the addition of a small amount of Sterox CD.



Sudsing is controlled by Sterox CD, a 100%-active detergent, surface-active agent and emulsifier.

If you don't want dust... if you don't want suds... use Monsanto Sterox CD

Sterox* CD is a liquid, nonionic, 100%-active detergent, surface-active agent and emulsifier. It is compatible with cationic and anionic detergents and with soaps. It is efficient in a wide range of applications, including metal cleaning, metal treating, textile scouring and wetting, and in numerous other processes requiring cleaning, wetting out or emulsification.

Sterox CD blends readily with soap, carbonates, silicates, phosphates and all synthetic detergents. It gives outstanding performance in hot or cold, hard or soft water.

For technical information, mail the coupon for a free copy of Technical Bulletin No. P-129.

STEROX CD DATA (typical values)

Appearance	Pale-yellow to light-amber liquid
Odor	Mild fatty odor
Sp. Gr. at 25° C.	1.060
Viscosity	
Saybolt Furol Seconds:	
at 70° F.	250
at 100° F.	100
at 210° F.	20
Pour Point	50° F.
Flash Point	518° F.
Hygroscopicity	Slightly hygroscopic
SOLUBILITY	Miscible in acetone, benzene, carbon tetrachloride, ethanol, xylene. Partly soluble in ether (ethyl), gasoline, kerosene, methanol and mineral spirits.

URGENT... return containers promptly

There's an acute shortage of tank cars, carboys and drums. These containers are urgently needed for the transportation of chemicals from our plants to yours.

If you buy in tank-car quantities, please unload cars as quickly as possible and start them back to Monsanto.

If you buy in carboys or returnable drums, completely empty one drum or carboy before starting on another, and send the empties back. You'll help yourself to better service by returning drums, carboys and tank cars just as soon as you can. The shipment you hold up may be your own.

Santomerse No. 1... detergent useful in numerous industries

Versatility makes Monsanto Santomerse* No. 1 the all-purpose detergent and wetting agent. It serves many industries in numerous applications from laying dust on race tracks to dehairing hogs.

Among the various uses of Santomerse No. 1 are cleaning, penetration, dispersion, emulsifying and spreading. It is so effective that many industries that require two or more of these functions use Santomerse No. 1 for all of them. This simplifies their inventories.

Santomerse No. 1 is an anionic detergent-wetting agent with a minimum of 40% active alkyl aryl sulfonate, the remainder being principally sodium sulfate builder. This combination has been found best for high efficiency and economy.

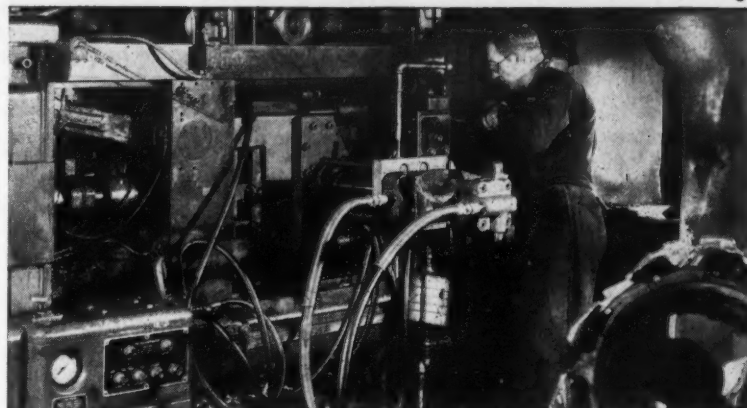
Free-flowing Santomerse No. 1 is compatible with other detergents and builders. It is effective in hard or soft water, in acid or alkaline baths, in hot or cold solutions. In operations where pH is important, Santomerse No. 1 is ideal because it does not affect the pH to any marked degree. Any change that does take place can be adjusted easily.

If you use a detergent or wetting agent in your business, you'll find interesting and helpful information in Monsanto's booklet, "Santomerse No. 1 All-purpose wetting agent and detergent." Indicate your wishes on the coupon and a copy will be mailed to you free. If you want suggestions on the use of Santomerse No. 1 in specific applications, contact the nearest Monsanto Sales Office.

NEW... Santomerse 80

Santomerse 80 is new in the extensive line of Monsanto's synthetic detergents. It is 80% active alkyl aryl sulfonate, the remainder being principally sodium sulfate builders. Generally, it can be used in place of Santomerse No. 1 to get less bulking. Santomerse 80, available in flakes, blends easily with phosphates, carbonates and silicates. Mail the coupon for details.

New safety for die casters by maker of Skydrol



Photographed in the plant of the Dollin Corporation.

With Pydraul* F-9, Monsanto brings new safety to die-casting in the same degree that Skydrol* fire-resistant-type hydraulic fluid has brought new safety to aircraft operations. Skydrol now is serving all domestic air lines flying DC-6's.

Pydraul F-9 is a nonflammable-type hydraulic fluid proved under test conditions far more severe than those encountered in normal die-casting operations. For example:

Pydraul F-9 did not flash or ignite when sprayed, dripped or flooded on molten metal heated to approximately 1,500° F.

Pydraul F-9 did not flash or ignite when sprayed, at 1,000 p.s.i., into the 6,000° F. zone of an oxyacetylene welding flame.

Pydraul F-9 has been proved in service for more than two years. In addition to safety, it offers economy and efficiency. Pydraul F-9 is highly resistant to mechanical shear and chemical breakdown. It is an excellent lubricant that is noncorrosive to metals ordinarily used in hydraulic machines.

If you are interested in a hydraulic fluid that offers extra safety and efficiency, mail the coupon for Monsanto Technical Bulletin No. O-75.

Orthophenylphenol, Technical, Available

Here's a useful organic chemical that you can buy... now... from Monsanto... at a reasonable price.

It is orthophenylphenol, technical, which is employed as an intermediate or raw material for the manufacture of a variety of products, among them: preservative for glues and paints, germicide for poultry and stock disinfectants.

Typical Analysis of Orthophenylphenol, Technical

Crystallizing Point.....	50.6° C.
Appearance: Solid.....	Lt. Tan-White
% Ortho P. P. (from Cryst. Pt. Curve).....	95.2
Phenol (from Cryst. Pt. Curve).....	4.8
First Drop.....	277° C.
50%.....	288° C.
Dry Point.....	289° C.

MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

*Reg. U. S. Pat. Off.



SERVING INDUSTRY... WHICH SERVES MANKIND

MATERIALS

Cleaned surfaces are then coated with this compounded primer and allowed to set for about 2 hrs at 70°F, followed by a second coat and setting.

Finish coat is also prepared at the time of use, mixing 1 part catalyst with 7 parts uncompounded finisher. This is applied over primed surfaces by brushing, at temperatures no lower than 60°F. Setting time between coats is 16 hr, with 24 hr set before placing surface in service. A minimum of 2 coats of Alkaloy 550 finish coat is recommended for mild corrosive conditions, with additional coats as severity increases.

Source: Development of The Atlas Mineral Products Co., Dept. CP, Mertztown, Pa. . . or for more information check CP 4911 on handy form, pages 2 and 3.

Trichlorobenzene being made in pilot plant . . .

samples of clear, colorless liquid are now available for evaluation by industry

Uses: Major ingredient of compounded transformer oils. Excellent solvent for oils, fats, waxes, certain resins, and oil soluble dyes. Also used as dye intermediate, heat transfer medium, lubricant, and toxicant in control of termites.

Features: Being produced in pilot plant quantities. Samples are available for evaluation.

Description: Trichlorobenzene, as made by this manufacturer, is a clear, colorless liquid predominating in the 1, 2, 4 isomer, but containing small amounts of other isomers and higher boiling material. Boiling range is 200-235°C, specific gravity 1.460-1.477 at 15.5/15.5°C, and flash point 110°C. It has no fire point. It is fully miscible with many organic solvents.

Source: Pennsylvania Salt Manufacturing Co., Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. . . or for more information check CP 4912 on handy form, pages 2 and 3.

Plastic, rubber, ceramic items don't require degreasing after molding . . .

can be finished directly due to non-oily characteristics of mold release agent

Uses: Mold lubricant for release of molded plastic, ceramic, and rubber articles.

Features: Sprayed or wiped into casts or molds, quick release of odd or irregular shaped molded items is assured. Life of dies, casts, or molds is prolonged due to efficient lubrication and nearly 100% burn-up of carbonaceous material. Finishes of molded items are enhanced since there is no oil spotting. Non-oily characteristics of the lubricant permit immediate finishing operations of items after molding, completely eliminating conventional degreasing.

Description: "Mold-Ease Concentrate PCR" is usually diluted with 10 parts water for molding plastics, diluted 7 parts of water for rubber applications, and diluted with 4 to 6 parts water for ceramic use. Concentrated form permits diluting to fit individual needs.

Source: Development of the Merix Chemical Company, Dept. CP, 1021 E. 55th St., Chicago 15, Ill. . . or for more information check CP 4913 on handy form, pages 2 and 3.

SEND INFORMATION: ☐ Ortho-nitrophenyl.
☐ Orthophenylphenol. ☐ Santomerse 80.

SEND LITERATURE: ☐ Intermediates catalog.
☐ Booklet, "Santomerse No. 1."
☐ Sterox CD Bulletin P-129.
☐ Pydraul F-9 Bulletin O-75.

SEND SAMPLES:
☐ Zinc diethyldithiocarbamate.
☐ Zinc dimethyldithiocarbamate.
☐ Zinc dibutyldithiocarbamate.

MONSANTO CHEMICAL COMPANY
1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, literature or samples indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

When inquiring check CP 4910 on handy form, pgs. 2-3

WHAT NEW FIELD
IS OPENING HERE?

Look into

Technical Eicosane

C₂₀ - Eicosane

With this hydrocarbon you may be on the research road to new products with new uses. Technical Eicosane is predominantly a straight chain paraffin containing an average of 20 carbon atoms.

Eicosane can be highly chlorinated to yield a more stable and less viscous product than when ordinary waxes are used. Further, it chlorinates more easily. The end product can be used in fireproofing, leather treating, etc. Monochlorinated Eicosane can also be used as an alkylation material where long side chains are desirable. Eicosane can be oxidized and will react with chlorine and sulfur dioxide.

Can you carry the ball from there? Write us for further information — The Atlantic Refining Company, Chemical Products Section, Dept. C-2, 260 S. Broad St., Philadelphia 1, Pa.

SOME OF THE ATLANTIC PETROLEUM CHEMICALS
ARE CURRENTLY IN SHORT SUPPLY

IN THE EAST AND MIDWEST

THE ATLANTIC REFINING COMPANY

Philadelphia • Pittsburgh • Providence • Charlotte • Chicago

ON THE WEST COAST

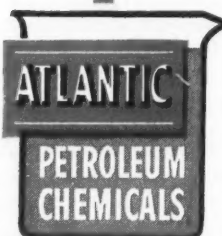
L. H. BUTCHER COMPANY

San Francisco • Los Angeles • Seattle • Salt Lake City • Portland

IN CANADA

NAUGATUCK CHEMICALS . . . Division of Dominion Rubber Co., Ltd.

Elmira • Montreal • Toronto • Windsor • Winnipeg • Saskatoon • Calgary



Without obligation, please send me further information on

TECHNICAL EICOSANE

(DEPT. C-2)

Name _____

Company _____

Address _____

When inquiring check CP 4914 on handy form, pgs. 2-3

MATERIALS

Patches in rubber linings excel corrosion resistance of linings themselves . . .

flexible, hard, resistant to cracking, adherent to wood and rubber, low shrinkage

Uses: Patching material for rubber coatings and linings.

Features: Patches are flexible, hard, resistant to cracking, completely adherent to rubber and wood, more corrosion resistant than either of these two materials and have low shrinkage. Indefinite shelf life is reported for the material.

Description: Following steps are followed for applying "Carbo-Flex 6040" to rubber: 1) damaged section of lining or coating is cut away to bare metal base; 2) one coat of Carboline Primer #3 is applied to the metal alone and allowed to dry for 4 to 8 hours; 3) two parts (by weight) Carbo-Kote Fluid are mixed with 1 part Carbo-Flex 6040, yielding a heavy paste; 4) this is then troweled over the exposed metal and lapped over the good rubber by 1". Drying time is 2 to 3 days at 70°F; however, use of heat will reduce drying time to about 8 to 12 hours.

Resulting patch can be tested with a spark tester, the same manner in which the original rubber lining was tested.

For application to wood, surfaces should be clean and dry. The mixture described above is then applied directly without need for primer.

Source: Development of the Carboline Company, Dept. CP, 7603 Forsythe Blvd., St. Louis 5, Mo. . . or for more information check CP 4915 on handy form, pages 2 and 3.

Protects concrete and steel against alkalis, salts and acids . . .

synthetic rubber lining and coating material useful in steel making, electroplating, chemical processing

Uses: As protective coating and tank lining in the steel, electroplating and chemical process industries.

Features: When properly applied to concrete or steel, material forms an effective synthetic rubber lining or coating that is resistant to alkalis, salts and most non-oxidizing acids at temperatures below 160°F.

Description: Before Neobon compounded finisher is applied, the concrete or steel surface must be thoroughly cleaned and primed with two coats of Neobon Primer.

Concrete must be brushed free of loose cement, treated with muriatic acid, rinsed with water, and allowed to dry before applying primer. Steel should be blasted with shot or sand. When using as a tank lining, it is usually advisable to cover welds and round out corners with a special trowel cement.

Finisher is made by mixing accelerator with uncompounded finisher. These materials are shipped in correct proportions. Application is by brush or spray, the latter preferred. Four coats are recommended for splash and fume service, 20 coats for heavy duty service. About one hour should be allowed between coats.

Coatings will cure in less than a week at ordinary temperatures, but will cure much faster at elevated temperatures. For example, complete cure will take place in a

CHEMICAL PROCESSING

MATERIALS

few hours at 170°F. Linings protected by brick work, and coatings, regardless of thickness, can be placed in service within one day after application.

Source: Product of The Atlas Mineral Products Co., Dept. CP, Mertztown, Pa. . . or for more information check CP 4916 on handy form, pages 2 and 3.

Polyester fiber now out of the lab . . .

resilience and stability under wet or dry conditions, good stretch, bleach, and heat resistance

Uses: Potential industrial applications for polyester fiber lie in the fields of fire hose, V-belts, rope, laundry nets, sail cloths, etc. Used alone or in blends.

Features: Distinctive functional properties include high wet and dry resilience, dimensional stability under wet or dry conditions, high stretch resistance coupled with high strength, high bleach resistance, and high heat resistance. Launderers well and resists degradation by sunlight.

Description: "Dacron" is the outcome of development work on product whose laboratory designation was Fiber V. Dacron is a condensation polymer obtained from ethylene glycol and terephthalic acid; it is not chemically related to nylon.

Maker reports considerable work remains for improving the fiber. Problems that must be solved include 'pilling' or forming of little balls on the surface of a fabric, static resulting from low electrical conductivity due to low moisture content in fiber, fabricating and dyeing difficulties.

Source: Development of E. I. du Pont de Nemours and Company (Inc.), Dept. CP, Wilmington 98, Del. . . or for more information check CP 4917 on handy form, pages 2 and 3.

Easily brushed coating thick enough to fill cracks in masonry . . .

makes exterior surfaces resistant to chipping or cutting action

Uses: Coating for exterior stucco and masonry surfaces.

Features: Easily brushed, yet thick enough to hide cracks in masonry surfaces, and at the same time give a durable, exterior coating that will be resistant to chipping or cutting action.

Description: "Rubber Coat #322" is a ready-mixed silicated, heavy-bodied formulation available only in white. It bridges hairlines or other small cracks, and is unaffected by alkali or lime action in the concrete or the mortar joints. Finishes are tough and are breathing type (allows trapped moisture to escape rather than result in blisters). Applies over either old or new masonry, wet or dry. Doesn't change color when wet.

One coat is suitable for most applications because of thickness and hiding characteristics. Not recommended for spray application due to abrasive action on spray guns; however, an Alemite gun may be used.

Source: Development of The Wilbur & Williams Company, Dept. CP, 130 Lincoln St., Boston 35, Mass. . . or for more information check CP 4918 on handy form, pages 2 and 3.

HOOKER CHEMICALS

basic for: **SYNTHETIC FIBERS**

TEXTILE PROCESSING

DYESTUFF MANUFACTURE

Directly or indirectly, the textile industry depends upon Hooker for uniform high quality chemicals.

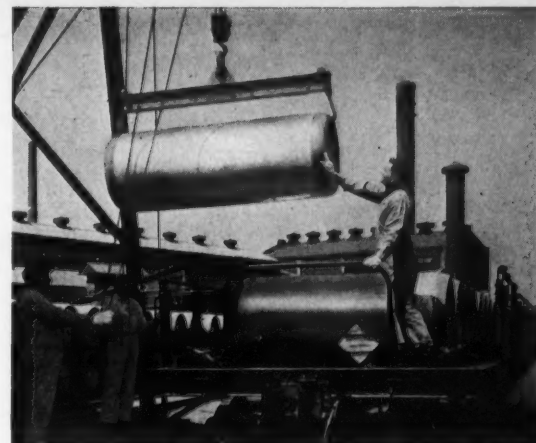
Viscose Rayon, for example, employs Hooker Chemicals all the way from the manufacture of dissolving pulp (chlorine and caustic soda) to the final production of fibers (caustic soda, lauryl pyridinium chloride, sodium sulfide, sodium sulfhydryte).

Textile Processing uses Hooker Caustic Soda for kier boiling, mercerizing, in sodium hypochlorite bleach, and as a dyebath assistant. Hooker Chlorinated Paraffin is used in formulations that make canvas water-repellent and fire-retardant.

Dyestuffs . . . Although we do not manufacture dyes, we provide over 30 dyestuff intermediates that go into the making of the finished textile product. The most important of these are listed at the right.

Special Products . . . We are interested in working with dyestuff and specialty manufacturers to develop new intermediates for use in dyes, mothproofing compounds, flame retardants, and similar products. In addition to the products we regularly supply, we have provided many new and special chemicals, on pilot plant or commercial scale. Your inquiry is invited.

FOR UP-TO-DATE DELIVERY INFORMATION . . . please keep in touch with your Hooker sales representative. He will keep you informed of any changes in the delivery situation, and will notify you promptly as materials become available.



LIQUID CHLORINE in one-ton containers—one of several convenient packages in which Hooker ships this high-purity bleaching agent.

For Rayon Manufacture and Processing

Caustic Soda	Lauryl Pyridinium Chloride
Sodium Sulfhydryte	Sodium Sulfide

For Textile Processing

Benzoic Acid	Muriatic Acid
Caustic Soda	Sodium Sulfhydryte
Chlorine	Sodium Sulfide
Chlorinated Paraffin	

For Dyestuff Manufacture

Aluminum Chloride	Monochloroacetic Acid
Benzoyl Chloride	m-Nitrobenzoyl Chloride
Benzyl Chloride	p-Nitrobenzoyl Chloride
Caustic Soda	Phenyl Isocyanate
Chlorine	Sodium Sulfhydryte
Chlorobenzenes	Sodium Sulfide

For the complete list of Hooker Chemicals, send for Bulletin 100. For properties, specifications and typical uses of any chemicals listed here, ask for Technical Data Sheets. Please request them on your business letterhead.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

New York, New York • Wilmington, California • Tacoma, Washington

**HOOKER
CHEMICALS**

1-519

CAUSTIC SODA • CHLORINE • MURIATIC ACID • CHLOROBENZENES • SODIUM SULFIDE • SODIUM SULFHYDRATE • THIONYL CHLORIDE

When inquiring check CP 4919 on handy form, pgs. 2-3

You save time and
money using

"TERGITOL"
Trade-Mark
dispersant
TMN

AS A...

- leveling and flow-out agent in wax emulsion polishes
- flotation agent in acid systems
- rubber mold lubricant
- lime soap dispersant
- solvent for lacquers, inks, and alkyd resins

TERGITOL Dispersant TMN, a non-ionic surface-active agent, has a high degree of surface activity in water solution. As it is supplied, it contains 100 per cent active ingre-

dient. Call or write today the nearest Carbide and Carbon Chemicals office for a sample, or for the bulletin "TERGITOL Dispersant TMN," F-7387.

"Tergitol" is a registered trade-mark of Union Carbide and Carbon Corporation.

**CARBIDE AND CARBON
CHEMICALS COMPANY**

A Division of
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UCC

30 E. 42nd St., New York 17, N.Y. Offices in Principal Cities
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When inquiring check CP 4920 on handy form, pgs. 2-3

METALAB
LABORATORY EQUIPMENT

Out of this world in **QUALITY...**

Down-to-Earth in **ECONOMY**

Imagination in Lab Equipment?
Yes, but also the sound business virtues
of Economy, Efficiency, and Long Life.

Let METALAB help you plan—without obligation.

Write for Complete Catalog.

SECTIONAL LABORATORY FURNITURE
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METALAB
Equipment Corp.

230 DUFFY AVE., HICKSVILLE, L.I., N.Y.

When inquiring check CP 4921 on handy form, pgs. 2-3

MATERIALS

**Odor counteractants now
number over 40...**

combat stench of putrefaction, smells carried by paper and printing ink, many more

Uses: Series of formulations for effectively reducing, counteracting, or neutralizing offensive industrial odors.

Features: More than 40 formulations have been developed to combat such offensive odors as the stench of putrefaction... products and by-products stemming from the use of oils and fats in rendering and dehydrating operations... smells carried by paper or printing ink... etc.

Description: Odor counteractants are called "Reducers" and function on the principle of opposing odors by neutralization. Maker points out that every odor problem must be treated individually, and formulae compounded especially for the situation.

Source: Announced by Airkem, Inc., Dept. CP, 241 East 44th St., New York 17, N. Y. . . . or for more information check CP 4922 on handy form, pages 2 & 3.

**Improves fluidity of
solid suspensions...**

ammonium salt of amido-polyphosphate uses also include water softening, fire retarding

Uses: Effective as a sequestering and as a water softening agent. As a fire retardant, it is preferred in applications where an exceptionally high P_2O_5 content, good solubility, and non-crystalline character are needed. Deflocculating and dispersing properties show promise in improving the fluidity, pumpability, and solids content of suspensions of kaolin clay, calcium carbonate, and other finely divided solids used in the paper and related fields. Applications are indicated in soap and detergent formulations for providing water softening, building, and non-dusting characteristics.

Description: "Victamide" (an ammonium salt of amido-polyphosphate) is a white, odorless, fluffy, non-crystalline solid. Particle size is nearly all less than 5 microns. Apparent density is 22 lb/cu ft. Typical analysis: 76.1% P_2O_5 , 22.4% total NH_3 , 15.4% free NH_3 , and 7.0% amide N as NH_3 .

One hundred grams of the product dissolves in 100 cc of water — going into solution readily in hot water and slowly in cold. Slight solubility is shown in ethylene glycol; insolubility is exhibited in alcohol, acetic acid, butylacetate, acetone, benzene, toluene, and carbon tetrachloride.

Viscosity increases with concentration up to 25 centipoises at equal parts by weight of Victamide and water. At this concentration, the solution has a specific gravity of 1.394.

Product forms complexes with many metallic ions, including calcium, magnesium, copper, aluminum, and iron. Amounts necessary to soften hard water, when used with soap, are illustrated in the following table:

VICTAMIDE oz/gal	HARDNESS OF WATER TREATED, ppm					
	50	100	200	300	400	500
Room Temp	.03	.06	.14	.34	.60	.74
140°F	.02	.06	.12	.20	.28	.44

Source: Development of the Victor Chemical Works, Dept. CP, 141 W. Jackson Blvd., Chicago 4, Ill. . . . or for more information check CP 4923 on handy form, pages 2 and 3.

Magnolia Airco

**Nitrogen
Hydrogen
Rare Gases
and Liquids**

**Are the Standard of Quality
in the Southwest**

Magnolia Airco gases — oxygen, nitrogen, hydrogen, argon, helium, neon, krypton, xenon, and liquid oxygen, nitrogen and air — are known throughout the Southwest for their high purity, unvarying uniformity and dependable quality. This uniformity and adherence to specifications of Magnolia Airco gases, and rare gas mixtures, are definite factors contributing to their satisfactory use.

And, no matter where your plant is located in the Southwest, you can depend on Magnolia Airco for a steady, dependable gas supply, packaged to meet your needs.

For more information, write your nearest Magnolia Airco office.



**AIR REDUCTION
MAGNOLIA Co.**

A Division of Air Reduction Company, Incorporated
Beaumont • Corpus Christi • Dallas • El Paso • Fort Worth • Hobbs • Houston
Oklahoma City • San Antonio • Shreveport • Tulsa • Wichita Falls

Southwestern Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories.

When inquiring check CP 4924 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

Adhesion of coating for polyester laminates remains firm . . .

various types show resistance to u-v rays, humidity, abrasion

Uses: Coating material for polyester laminates.

Features: Different varieties of this material have excellent properties of adhesion and resistance to ultra-violet radiation, humidity, salt spray, embrittlement and abrasion in varying degrees.

Description: Logoset coatings, when tested by the "Scotch Tape" test, show no chipping or peeling before and after considerable aging. Most types are not affected in humidity cabinet tests run at 100°F and 100% humidity. Other types are known to withstand salt spray tests involving 20% salt solution at 95 to 100°F.

Most of the coatings are not made brittle when coated panels are left in an oven heated to 158°F for seven days. Weatherometer test of 500 hours finds most Logoset coatings without visible discoloration or other deterioration. It appears that some varieties of the coating will withstand the two-year outdoor exposure tests in Florida and Arizona.

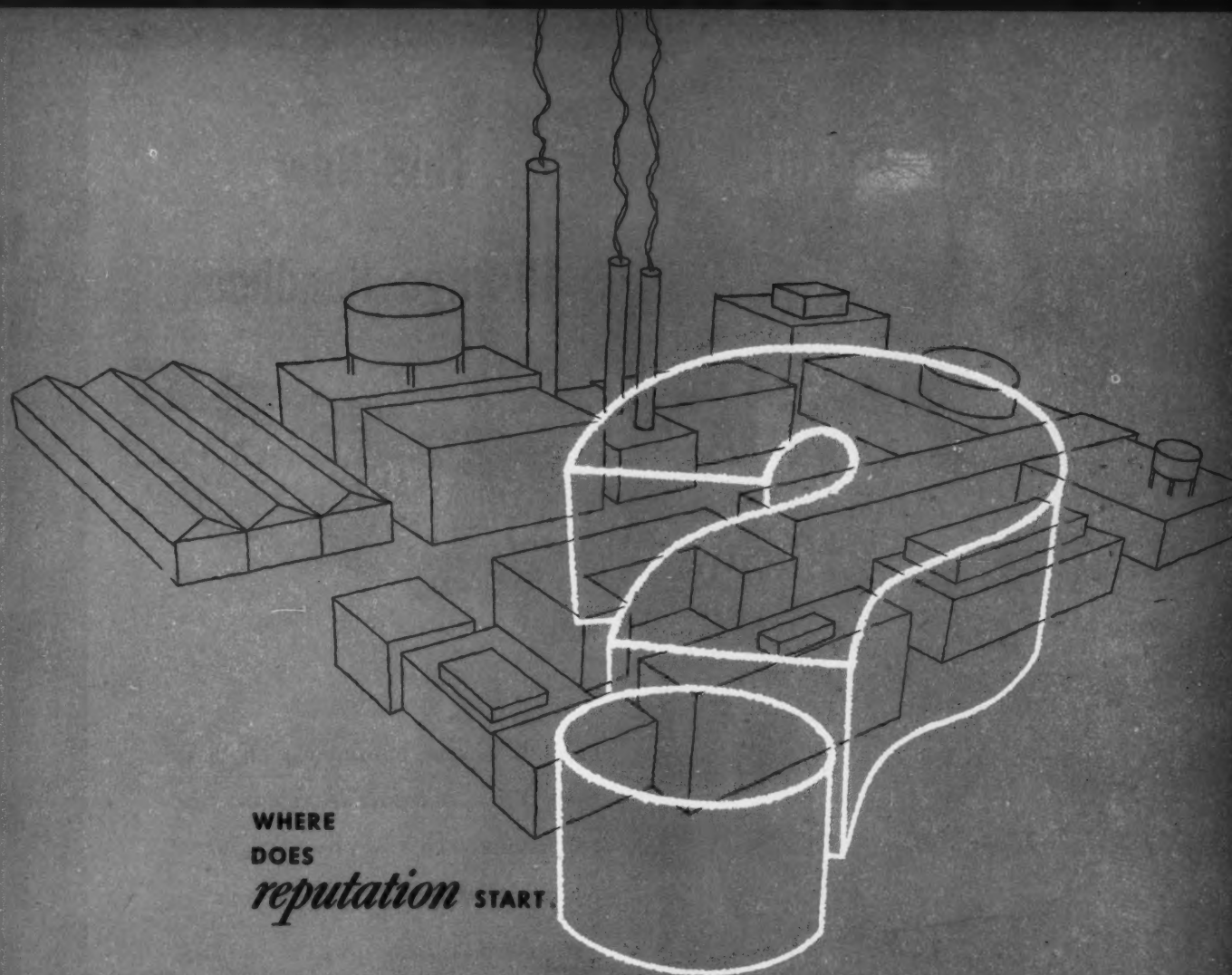
The difficulty of developing high-grade coating materials for reinforced plastics and other polyester laminates has been complicated by the fact that, after heat curing, these laminates become insoluble in organic solvents. While this permits use of an almost unlimited number of types of solvents and resins in formulating finishes, it eliminates the ability to obtain adhesion by controlled solvent action.

Source: Bee Chemical Company, Dept. CP, 13799 S. Avenue "O", Chicago 33, Ill. . . . or for more information check CP 4925 on handy form, pages 2 and 3.

Synthetic nitrile rubber

Thirty-page booklet on synthetic nitrile rubber lists properties, compounding techniques, and applications. "Chemigum" is issued by The Goodyear Tire & Rubber Company, Inc., Chemical Div., Dept. CP, Akron 16, O. When inquiring specify CP 4926 on handy form, pages 2 and 3.

For more information on product at right, specify CP 4927 . . . see information request blank between pages 2-3.



WHERE
DOES
reputation START.

Reputation, most cherished of all business assets, is difficult to achieve and must ever be earned over and over again. In a business such as ours, the job of building and preserving reputation is the responsibility of everyone in the organization: management, the men and women in the plant, sales, service and office forces. With us, of course, the job starts in the Mallinckrodt laboratories, with the experienced chemists who control every process, supervise every operation, and develop and produce fine chemicals to meet the high specifications of industry. These facilities are conscientiously maintained so that our customers, as well as ourselves, can be sure that the Mallinckrodt reputation is earned again with every ampul, bottle, drum — or carload.

MALLINCKRODT CHEMICAL WORKS • St. Louis • New York • Montreal



ORGANIC INTERMEDIATES • INORGANIC
CHEMICALS • CHEMICALS FOR ELECTRONIC
USES • METALLIC SOAPS • ANALYTICAL
REAGENTS • PHOTOGRAPHIC CHEMICALS

• MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY • SINCE 1867 •

Yours for the asking This New

48-Page Handbook

"TRITON SURFACE-ACTIVE AGENTS"

Here's concise information on these low-cost surface-active agents that speed and simplify processing in so many industries.

If your processing involves problems of wetting, penetration, cleansing, dispersion, foaming, or emulsification, you'll want this handy reference manual.

Use your business letterhead to send for your copy.

The TRITON surface-active agents improve cleaners, cosmetics, household products, insecticides, leather, paint, paper, rubber, textiles, and countless other products.

TRITON is a trade-mark, Reg. U. S. Pat. Off. and in principal foreign countries.

CHEMICALS  FOR INDUSTRY

**ROHM & HAAS
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

MATERIALS

Insecticidal, herbicidal uses for surfactants

Use of surfactants in insecticides and herbicides is topic of 12-page publication. "Compounder's Manual" is issued on letterhead request to Dept. 53, Antara Products Div., General Dyestuff Corporation, Dept. CP, 435 Hudson St., New York 14, N. Y.

Flames don't destroy thermoplastic . . .

tough, corrosion-resistant sheet won't support combustion

Uses: Thermoplastic sheet material for use where flame resisting properties are desired or required. In airplanes, the material is considered practical for interior fairways, instrument boards, cable covers, covers for protruding instruments, hood frames for wing tip lights, window frames, and others.

Features: Will not support combustion.

Description: Furnished as flat sheets in several standard sizes, in four standard colors and five grains. It can be easily formed into simple or compound shapes.

The sheet is reported as being extremely tough, highly resistant to impact, and light in weight. It resists corrosion, is stable under changing atmospheric conditions, has exceptional electrical insulating properties and low rates of heat conductivity and water absorption. It will not chip or warp, is easy to clean, resistant to staining, grease and mildew.

Source: Flame-resistant Royalite sheet is a development of United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . . or for more information check CP 4928 on handy form, pages 2 and 3.

Uses in aluminum paints indicated for pigment

Pigment for use in aluminum paints is described in 4-page bulletin. It is a standard lining type of pigment with high diffuse reflectivity. Bulletin 546 is issued by Metals Disintegrating Company, Inc., Dept. CP, Elizabeth, N. J. When inquiring specify CP 4929 on handy form, pages 2 and 3.

➤ For more information on product at left, specify CP 4930 . . . see information request blank between pages 2-3.

MATERIALS

Two agents thicken all types of cleaners, paint removers, paints, adhesives . . .

one is best in binary liquid systems, other is used with petroleum solvents only

Uses: Bentone 18 is used for thickening organophilic liquids, providing maximum gelling efficiency in mixtures of polar and non-polar solvents. It has been used advantageously in preparation of solvent type cleaning fluids and paint removers, and has possibilities for use in paints, varnishes and adhesives of all types. It is useful in thickening and reinforcing asphalt, coal tar resin and wax solutions.

Bentone 34 produces excellent thickening effects in single hydrocarbon solvents, independent of non-polar combinations. Main use will probably be in coating compositions where petroleum solvents are the only thinners employed. It does not swell appreciably in other solvents such as ketones, esters or alcohols.

Features: Bentone 18 gels prepared with blends of organic liquids have been found to have excellent stability over a storage period of more than 20 months. In comparison tests with commercial paint removers containing alcoholates and stearate-wax compositions as gelling agents, a Bentone 18 remover appeared to be much less harmful on subsequent coatings. Nitrocellulose lacquer coats applied after the conventional removers remained tacky and soft. The coat applied over the Bentone 18 thickened remover dried hard with good adhesion.

Bentone 34 shows rapid and optimum swelling in petroleum solvents, and may be added to paint compositions during the grind, without special precautions. It has been found that this material can keep pigments in suspension throughout paints, even when the paints stand for 1½ years without agitation.

While all paints thickened with Bentone gelling agents show a decrease or loss of action over a period of time, the decrease is gradual and uniform, and its action can be predicted. This might be an advantage over many commonly used metal salts where the effects are unpredictable and often result in an undesirable initial consistency increase with subsequent "gushing" of the thickening agent to the bottom.

Description: The Bentones are formed by chemical reaction of the clay, bentonite, with the salts of organic bases or alkalis. Bentone 18, for example, is octadecyl amine bentonite, the number referring to the carbon atoms in the molecule or the relative molecular size of the organic radical. It is a finely divided, cream colored powder with specific gravity of 1.88 and weighing 15.6 lb per solid gal.

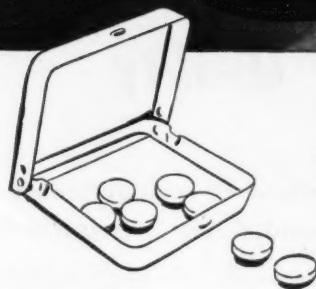
In a binary liquid system, Bentone 18 gives transparent gels with particle size well within the colloidal range. The same compound dispersed in toluene or petroleum solvent gives thin opaque slurries of particle size larger than the colloidal range. Approximately 3 to 6% is required to thicken solvent blends sufficiently for preparation of liquid type paint removers; about 7 to 15% for paste type.

Bentone 34 is similar to Bentone 18 in general appearance and composition, except for its organic radical.

Source: Being produced in quantity by National Lead Company, Dept. CP, 111 Broadway, New York 6, N. Y. . . . or for more information check CP 4931 on handy form, pages 2 and 3.



Continental is the largest producer of utility containers in the U. S. The Continental line of steel containers includes lug cover pails, utility cans, flaring pails and closed-head drums in light and heavy gauges. After serving their original purpose, they can be re-used in many different ways.



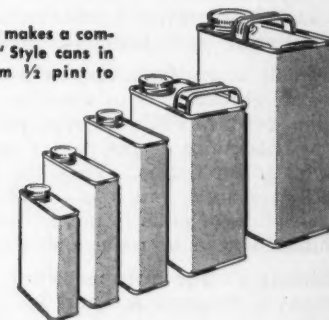
Sure Relief **FOR** **SHIPPING HEADACHES**

Damaged shipments are a headache. They put a dent in profits and strain customer relations. Those headaches will leave in a hurry when heavier products are packed in Continental steel containers.

Continental's rugged pails and drums are built to take it. They give top protection during every mile of travel, weather the roughest handling, and come up beaming sales appeal.

There's no question that it is sound salesmanship to put trade-mark and sales message on the side of every pail and drum that's shipped—and the better the lithography the better the salesmanship. Continental's master lithographers have the skill and experience to lithograph steel containers in colors and designs that really sing. Another good sales idea is to standardize labels . . . give the entire line a family appearance.

Continental also makes a complete line of "F" Style cans in every size from ½ pint to one gallon.



CONTINENTAL CAN COMPANY

Eastern Division: 122 E. 42nd St., New York 17 • Central Division: 135 So. La Salle St., Chicago 3 • Pacific Division: Russ Building, San Francisco 4

When inquiring check CP 4932 on handy form, pgs. 2-3

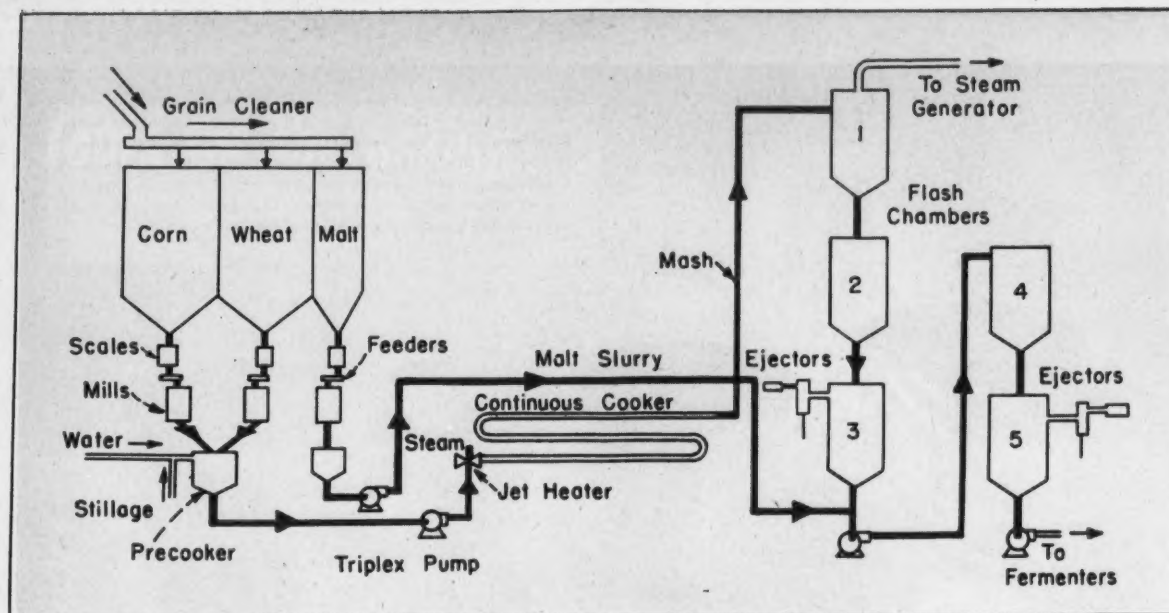


Fig 1 — Schematic diagram of continuous cooker

Process Instrumentation

relays actuated by the grain timer will initiate corrective action proportional to this slightly increased deviation of grain flow rate from the control point, tending to equalize scale cycle with timer cycle.

Grain conveyor is driven by a variable speed drive positioned by an air motor. Air pressure on the diaphragm of the motor is increased or decreased according to the action of the two electric-pneumatic relays that are actuated by grain timer. The grain timer loading pressure acts simultaneously, through a totalizing relay, to approximately position conveyor speed control. This

results in a more rapid stabilization of grain rate since timer need only correct for a small part of load change.

Where there is more than one scale in the cooking system, as in the Seagram cooker, it becomes necessary to totalize the loading pressures for each scale in order to obtain a value for total grain feed. The square root relationship precludes use of a simple pneumatic adding relay and necessitates utilization of two averaging relays. Each of these has a number of chambers equal to the number of scales in the system.

Bellows loading pressure acts on the appropriate chamber of the first relay. Output is then applied to each chamber of the second relay. It is the output of this second averaging relay which relates to the total grain

feed and is fed to adjustable Indexet units which position control indices of various Brown precooker flow controllers.

Provision must be made for possibility of one or more scales being shut down when cooking is below peak rates. An electric-pneumatic system assures that final

Instrumentation of Continuous Cooking at Seagram Assures Whiskey of Uniform Quality

Unique method of proportioning weight of grain feed to liquid flows is important part of system

PROBLEM: A major limitation in control of a continuous grain cooker in a distillery has been the difficulty of obtaining an accurate, continuous measurement of grain feed before it is mixed with controlled flows of water and stillage (see Fig. 1). Conventional methods of flow measurement are not applicable to grain because solid particles do not have the necessary homogeneity and fluidity. Volumetric methods are inadequate because these provide neither an accurate nor consistent indication of grain being fed into the system.

The only acceptable means of measuring grain flow is on a weight basis. This would be relatively simple if a continuous scale could be employed. However, Government restrictions do not permit use of this type in this particular application. Thus, the choice is limited to a batch type scale, and it is a problem to obtain a continuous flow of grain to the process, proportional to the controlled flows of water and stillage.

Solution: The Instrumentation Research Division of Joseph E. Seagram & Sons, Inc., Louisville, Ky., has developed a method for accomplishing this type of control, and has applied it to the company's continuous cooking process. Grain is weighed automatically by an intermittent batch type scale which fills and dumps repeatedly to supply required quantity of grain. Scale discharges into a hopper from which the grain is withdrawn by means of screw conveyor at rate predetermined by conveyor speed.

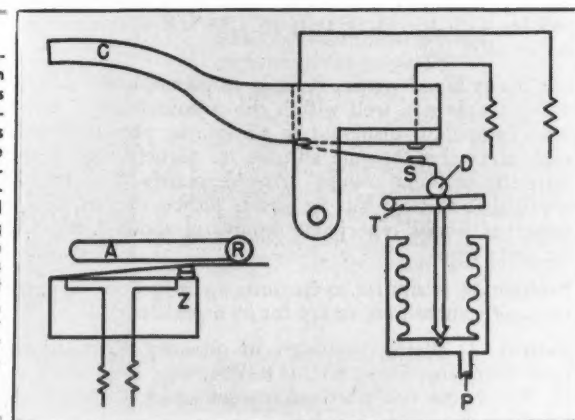
Heart of the control system is the "grain timer" shown in Fig. 2. This unit indirectly controls frequency of scale dumping. By controlling this and the speed of

the screw conveyor in relation to liquid flows, the proper amount of grain feed is assured.

A remote setter (manual remote pneumatic loading station) applies air pressure to the grain timer bellows, thus positioning cam C so that a certain time, as determined by air pressure, is required for one complete cycle of timer. This same bellows loading pressure acts simultaneously through two averaging relays to adjustable Indexet units which position control indices of the liquid flow controllers. Cam C is shaped so that grain flow rate is directly proportional to square root of loading pressure. Since the liquid flows bear square root relationships to their transmitted pressures, it is rather simple to ratio control the grain feed to liquid flows.

When scale dumping is slightly faster or slower than the timer cycle, two electric-pneumatic

Fig 2 — Schematic diagram of grain timer. In operation, sequence is started by scale micro-switch. Timer arm A starts to rotate counterclockwise at a constant speed provided by synchronous motor. Switch Z is released and held open by spring action. When timer arm A contacts cam C it pushes it upwards to a point where it closes switch S, thereby reversing motor which then moves timer arm A back to original position, completing cycle



output pressure from second averaging relay is proportional to total grain feed, irrespective of number of scales in operation. In addition, each scale and mill system is electrically interlocked so that current to grain timer is discontinued as soon as any system component is turned off or accidentally fails.

Another safety feature is a "high-low" pressure switch which de-energizes grain timer circuit whenever air positioning grain feeder drive drops to 2 psi or exceeds 15 psi.

Results: Close control of ratio of grain to water and stillage, combined with control of other variables in cooking process not dealt with here, assures uniform, high quality product.

Source: Most of the standard instrumentation for process was furnished by Minneapolis-Honeywell Regulator Company, Brown Instruments Division, Dept. CP, Wayne and Roberts Aves., Philadelphia 44, Pa. . . or more information check CP 4933 on handy form, pages 2 and 3.

Make on-the-spot pH readings anywhere with pocket-size meter and probe unit . . .

calomel and glass electrodes combined with sample holder to eliminate supports and beakers.

Uses: Pocket-size meter and companion probe unit for on-the-spot pH determinations anywhere. Scaled from 2 to 12 pH, with adjustment for readings from 0 to 14.

Features: Calomel and glass electrodes are combined with sample holder in a single polyethylene probe unit. This feature eliminates support and beakers, protects elec-



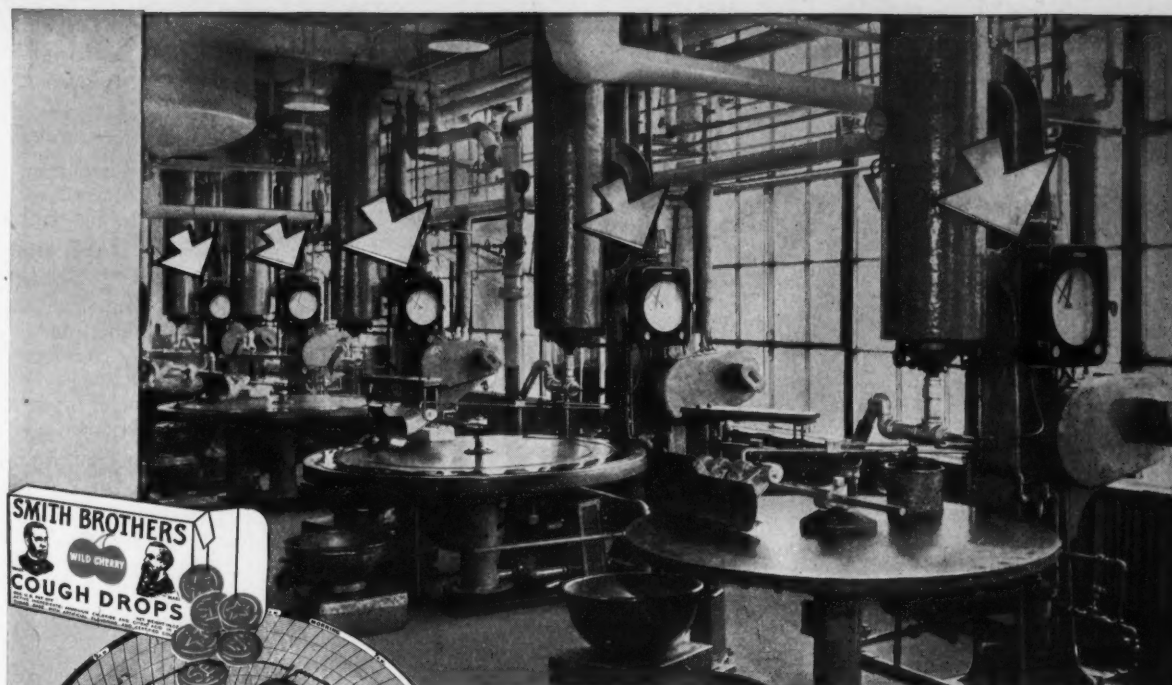
Pocket-size pH meter and companion probe unit with carrying case

trodes, and makes possible sample volumes of merely 0.5 ml. Accuracy of 0.1 pH can be attained.

Description: "Pocket pH Meter and Probe" is self-contained and complete with batteries (hearing-aid type for 1300 hours service) and plastic tubes of buffer and KCl solutions — all housed in a 3 x 5 7/8 x 2 1/2" Bakelite case. Weight is 3 pounds. Electrometer tube, switch and input connector are sealed in a single unit for freedom from high humidity. Grounded samples can be measured directly since there are no external power connections. Control is by means of one knob.

Source: Analytical Measurements Incorporated, Dept. CP, 585 Main St., Chatham, N. J. . . or for more information check CP 4934 on handy form, pages 2 and 3.

JUNE, 1951



Cooking of the "World's Best-Tasting Cough Medication" Is Automatically Regulated by

POWERS

Temperature Recording Regulators

They Save Labor — Help Insure Uniform QUALITY

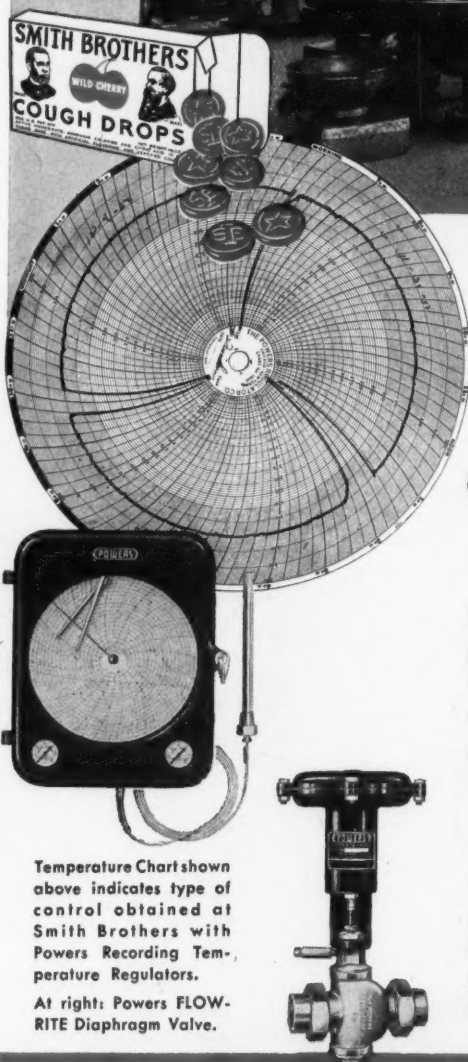
For 104 years Smith Brothers cough drops have been famous for good flavor by seekers of cough relief. When Smith Brothers sought relief from the errors and losses of manual control of cooking operations they installed Powers Recording Regulators in their plants at Michigan City, Ind. and Poughkeepsie, N. Y.

When you want better temperature or humidity control for

AIR CONDITIONED process or packaging rooms
DRYERS, drying, curing or chilling rooms • COOKING tanks, vats, retorts or kettles • WATER TEMPERATURE CONTROL — for every requirement

. . . contact your nearest Powers Office. There's no obligation. With 60 years of experience and a wide variety of self operating and pneumatic controls we may be able to help you select the best equipment for your requirements.

(SBCD)



Temperature Chart shown above indicates type of control obtained at Smith Brothers with Powers Recording Temperature Regulators.

At right: Powers FLOW-RITE Diaphragm Valve.

THE POWERS REGULATOR CO.

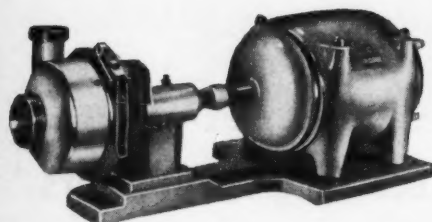
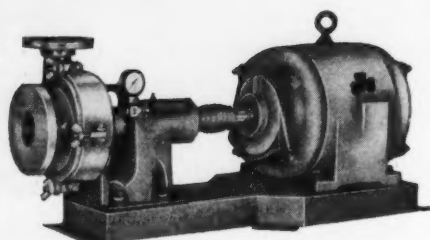
Over 55 Years of Pneumatic Temperature Control • Offices in Over 50 Cities • See Your Phone Book
CHICAGO 14, ILL., 2734 Greenleaf Ave. • NEW YORK 17, N.Y., 231 E. 46th St. • LOS ANGELES 5, CALIF., 1808 W. 8th St. • TORONTO, ONT., 195 Spadina Ave.

When inquiring check CP 4935 on handy form, pgs. 2-3



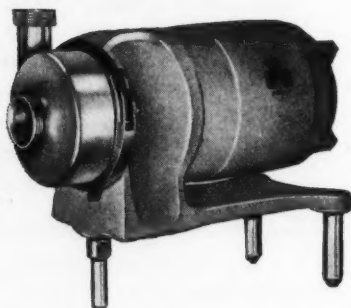
...for the
**UNUSUAL
APPLICATIONS**

Tri-Clover HEAVY DUTY INDUSTRIAL TYPE. Here is the model that is in demand to pump latex, water, brine, light oils, chemicals, paints, brewery products, and liquids in the food processing field where lines are of heavy I.P.S. type. This model offers quick disassembly features for ease in cleaning.



Tri-Clover STANDARD SERIES SANITARY TYPE. This model has been designed for the non-agitating, efficient pumping of milk, food products such as diced carrots, cream style corn, tomatoes, apple-sauce, relish and beverages. It is also practical in breweries and for the pumping of drugs and chemicals in solution.

Tri-Clover "PUMP KING" SERIES SANITARY TYPE. Designed for very efficient operation at 1800 and 3600 RPM, and especially where high speeds are required, through heaters, coolers, filters, clarifiers, etc. The 3600 RPM model is especially applicable in the dairy industry where high head and low capacity are essential and for handling low and medium viscosity liquids in the food and chemical processing industry.



OVER 30 years of continuous improvement is embodied in today's complete line of Tri-Clover Centrifugal Pumps for the chemical-process industries. All these pumps have exclusive features that mean more efficient liquid transmission. Benefit from these advantages when looking for a solution to your pumping problem.

WRITE FOR NEW PUMP CATALOG 250 . . . contains valuable data for selecting the right pump for every application.



TRI-ALLOY AND STAINLESS STEEL
SANITARY FITTINGS, VALVES,
PUMPS, TUBING, SPECIALTIES

FABRICATED STAINLESS STEEL
INDUSTRIAL FITTINGS AND
INDUSTRIAL PUMPS

When inquiring check CP 4936 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Continuously samples, indicates
viscosity of a stream . . .**

normal pressure existing in a line maintains constant sampling flow rate through meter

Uses: For continuous indication of the viscosity of a flowing stream. Can be used with remote secondary devices such as recorders, automatic controllers, etc.

Features: Makes use of the normal pressure existing in line for maintaining a constant sampling flow rate.

Description: The "Auto-Sampling Viscorator" instrument employs a weight loaded float and a tapered tube orifice to maintain a constant differential pressure across the connections of the Viscorator viscosity meter. This gives a constant meter sample rate — regardless of line fluctuations — in a simple self-contained unit.

Complete details are covered in maker's Catalog 50.

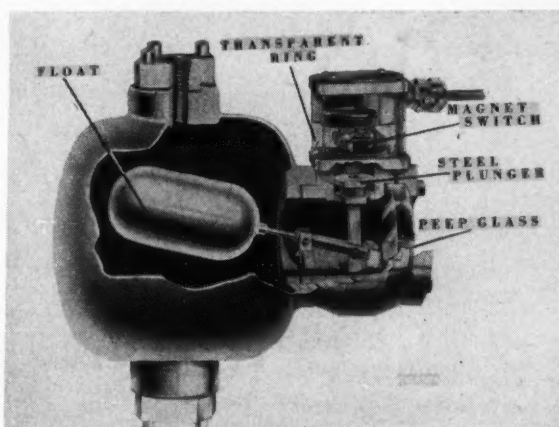
Source: Development of the Fischer & Porter Company, Dept. CP, Hatboro, Pa. . . or for more information check CP 4937 on handy form, pages 2 and 3.

**Float switch now servicable
with ammonia or Freon
refrigerants . . .**

has a frost-proof sight glass for observation of liquid level and float operation

Uses: Float operated switch for use as a liquid level control, or high level alarm, on surge drums or accumulators, in refrigeration systems. Has a sight glass for observation of liquid level.

Features: Serviceable with either ammonia or Freon at temperatures as low as -110°F. Tubular, clear plastic



Float switch for refrigerant systems

shield fitted over the sight glass prevents frosting at low temperatures.

Description: "MS Float Switch" has a magnet-switch wired to a solenoid valve in the liquid line. When the stainless steel float is at low level, the plunger is raised, engaging the magnet. When the float is at high level, the plunger is lowered, disengaging the magnet. Magnet-switch assembly can be serviced without pumping down since it is external to the refrigerant.

Source: Development of Mojonnier Bros. Co., Dept. CP, 4601 W. Ohio St., Chicago 44, Ill. . . or for more information check CP 4938 on handy form, pages 2 and 3.

RESIST CORROSION in Liquid Volume Measurements



with
**NIAGARA
STAINLESS STEEL
METERS**

• Your problems of metering corrosive liquids are probably solved with Niagara Chemical Meters. Built of type 316 stainless steel, they measure with the same accuracy as the standard bronze meters, best-known in industry for many years. They are simple, practical, reliable . . . Investigate today!

Please send me complete details on the uses Niagara Chemical Meters offer me for:

Liquid

Temp.°F Pressure.....p.s.i.

Flow rate g.p.m.

Company

By

Address

BUFFALO METER CO.

2892 MAIN STREET
BUFFALO, N. Y.

When inquiring check CP 4939
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

Measure pressures as high as 810 mm mercury . . .

Saran scale compensates for temperature variations

Uses: For measuring* absolute and differential pressures.

Features: Manometer has scale graduated up to 810 mm Hg at 0°C. Scale is silk-screened on Saran, which has a temperature coefficient that compensates for changes in density of mercury due to temperature variations.

Description: Glass assembly is supported by a rigid aluminum casting. U cut-out on vernier carrying block eliminates parallax in reading the meniscus. Stopcock is protected by a bracket.

There are two rods for easy mounting on a frame and a rod to carry the vernier.

Source: Emil Greiner Company, Dept. CP, 20-26 North Moore Street, New York 13, New York. . . or for more information check CP 4940 on handy form, pages 2 and 3.

Measure the conductivity of very pure water . . .

18 megohms at 25°C within scope of bridge and cells

Uses: Apparatus for measuring specific resistance of very pure water, such as that produced by mixed-bed ion exchangers.

Features: Resistances as high as 18 megohms at 25°C are within scope of apparatus.

Description: RD-146 "Solu Bridge" is calibrated 1-18 megohm-centimeter specific resistance (referred to 25°C) and has a manual temperature control covering the temperature range 5-35°C.

A number of conductivity cells of various types, with cell constant of 0.0100, for use with the bridge are available. One cell is a high-pressure type constructed of nickel and Teflon, and rated up to 500 psi. It is provided with a 2" NPT fitting for pipeline or tank installation.

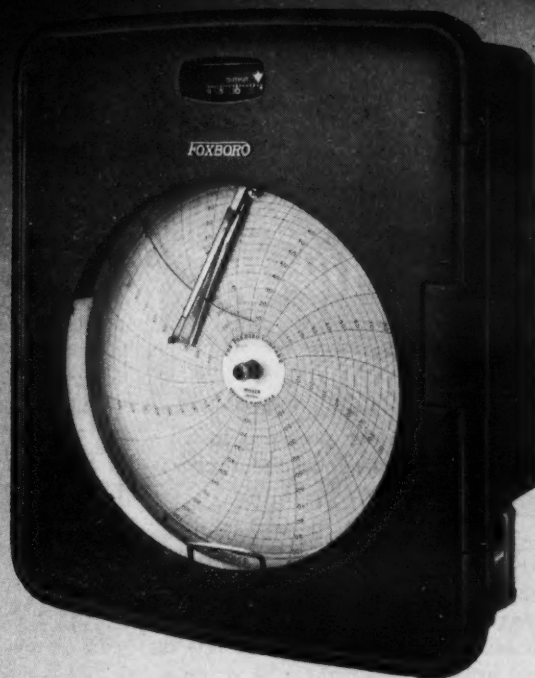
Source: Announced by Industrial Instruments Inc., Dept. CP, 17 Pollock Ave., Jersey City 5, N. J. . . . or for more information check CP 4941 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 4942 . . . see information request blank between pages 2-3.



better measurement and control of

TEMPERATURE



-350°F to +2800°F

Throughout the vast field of industrial temperature instrumentation, Foxboro will be found in the greatest number of installations where complete reliability and most economical fulfillment of optimum accuracy are vital. If your process requires temperature measurement or control in any range between -350°F. and +2800°F., the high engineering standards and complete diversity of Foxboro Instruments . . . backed by Foxboro's unequalled application experience . . . offer you the way to obtain it most effectively.

INDICATORS • RECORDERS • CONTROLLERS

electric, electronic and pressure-filled thermal systems

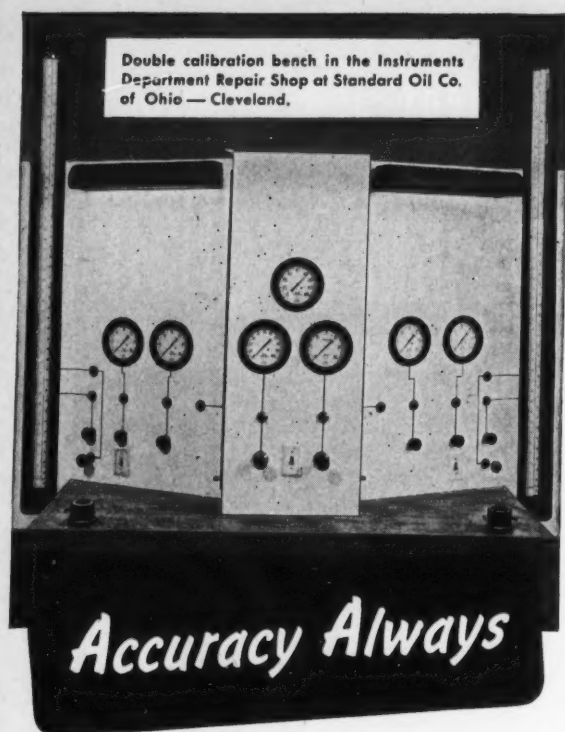
TRANSMISSION SYSTEMS • CONTROLLED VALVES

FOXBORO

Reg. U. S. Pat. Off.

For over 40 years, specialists in the measurement and control of temperature, pressure, flow, liquid level, humidity . . .

THE FOXBORO COMPANY • FOXBORO, MASSACHUSETTS, U.S.A.



With this unique calibration bench, Sohio checks its hundreds of flow and low pressure instruments — to insure their continuous accuracy of flow measurement.

The Meriam Dual Tube Model M-100 Manometers permit quick, easy reading up to 200" water pressure. These instruments consist of two separate manometer tubes in the same case — each tube with individual well. The left tube has a scale increasing upward; the right tube a scale increasing downward. Both tubes measure the same pressure and permit the operator to read the manometer tube at the most convenient eye level.

For many years at Sohio, as well as at other oil, chemical, and processing companies, Meriam Manometers have proved thoroughly satisfactory for their specific applications. For further information on this Dual Tube Manometer development ask for Catalog Sheet M-100.

THE MERIAM INSTRUMENT CO.
10940 MADISON AVENUE • CLEVELAND 2, OHIO
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MERIAM ★
★ *Instruments*
ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT
OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

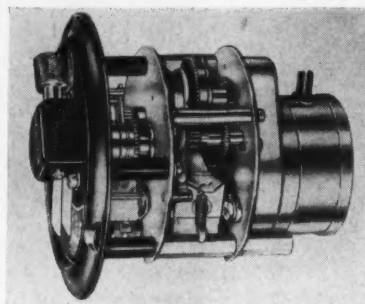
PROCESS INSTRUMENTATION

For delayed timing between action of control circuits, operation of load circuits . . .

time delays can be fixed or adjustable intervals

Uses: Provide an adjustable or fixed time delay between the operation of a control circuit and the subsequent closing or opening of a load circuit. Applicable to automatic control of heat treating, induction heating, lapping, grinding, injection molding, and other machine operation.

Description: Type TEC and TER time delay relays, without changing outside dimensions, are now equipped with a differential gear clutch motor — a combination of maker's synchronous motor and a differential gear drive. Consisting of an internal tooth planetary gear system, the sun gear is directly coupled to the motor, and the planet gears to the output.



Time delay relay

When locked by the braking relay, the internal gear causes the motor to drive the output shaft. When braking relay is released, the mechanism is instantly reset to the 'start' position by means of a reset spring. On the TER unit, the braking relay action is reversed so that it does not reset on power failure. It will reset if the braking relay is energized momentarily.

Source: Development of The R. W. Cramer Co., Inc., Dept. CP, Centerbrook, Conn. . . or for more information check CP 4944 on handy form, pages 2 & 3.

Promises a solution to the instrumental analysis of gas . . .

assortment of thermal conductivity cells being offered

Uses: Assortment of thermal conductivity cells intended to solve problems in instrumental analysis of gas. Successful applications in the gas industry have included gas purity determinations in the manufacture of oxygen, chlorine, nitrogen, and rare gases. . . measurement of SO₂ in stack gases. . . evaluation of pre-combustion mixtures, including natural-gas-city-gas blends and natural-gas-air and city-gas-air mixtures. . . and control of send-out gas.

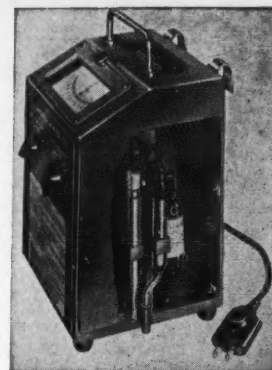
Features: Scope of cells is represented by a super sensitive unit with a signal strength of 60 mv for 1% H₂ in air (equivalent to better than 10 ppm in useful recorder deflection), to a fast acting sensing element which can give up to 5 determinations per minute in enriched oxygen atmospheres.

Description: "P-Kem" special assortment consists of 4 units, 3 of which are sensing elements, and the other a current control network for the 15 minute set-up of working circuits required for their use.

Sensing elements: 1) M/T-T-8 is a research unit of high output and with negligible current zero shift over a 40 ma range; 2) Improved Standard is an all-purpose cell unit that is indifferent to wide changes in rate of sample

THE CAMBRIDGE INDUSTRIAL MODEL DIRECT READING pH METER

- Operated from any AC outlet.
- Completely portable. Electrodes are integral parts of the instrument.
- Accurate to .10 pH.
- Shielded glass electrodes permit use of electrodes at any distance from the instrument.
- May be used on a bench or wall mounted.



- Self contained in one metal case including electrodes and buffer solutions.
- Extremely stable.
- Automatic temperature compensation.

Send for bulletin 910-NA

Also available: Electron-Ray Research Model accurate to .02 pH and Laboratory model accurate to .05 pH and Single- and Multi-point recorders.

CAMBRIDGE INSTRUMENT CO., INC.
3706 GRAND CENTRAL TERMINAL NEW YORK 17, N. Y.

Pioneer Manufacturers of

PRECISION INSTRUMENTS

When inquiring check CP 4945 on handy form, pgs. 2-3

ANY WAY YOU LOOK AT IT . . .



Up in the air, down in a pit, across the shop . . . you can really read the big, open dial of a Weston Thermometer. And because these rugged, all-metal instruments stand exposure, abuse—you know the temperature you read is *right*.

Various industrial, *Max-Min, and contact-making types are standard. Consult your Weston representative, or write Weston Electrical Instrument Corporation, 585 Frelinghuysen Avenue, Newark 5, New Jersey . . . makers of Weston and Tagliabue instruments.

*Registered trademark.

WESTON *Instruments*

When inquiring check CP 4946 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

flow; and 3) 60-S which completes its response for many of the heavier gases in less than 1 minute. Remote current control unit: designated as RCC.

Source: Announced by the Gow-Mac Instrument Company, Dept. CP, 22 Lawrence St., Newark 4, N. J. . . . or for more information check CP 4947 on handy form, pages 2 and 3.

Indicator has three scales to aid reading wide range of rotary speeds . . .

selection of wrong range or overspeeding does not damage the meter; calibration is very stable

Uses: For measuring rotary speeds, particularly where a wide range of speed is involved.

Features: Simple rotation of the indicator range knob permits selection of one of three ranges to measure any speed over a total range of 40 or 50 to 1, based on readings down to 1/10th full scale of the lowest range.

Various tachometer heads permit direct measurement ranges from speeds between 1/2 rpm and 100,000 rpm without the use of a speed changing drive.

Description:

Three range, single head, fixed installation tachometer indicator has scales four inches long with 100 divisions per scale. Scales are supplied for direct reading in any units such as rpm, fpm, inches/sec or in any quantity that is proportional to the speed actuating the head.



3-range tachometer indicator

Indicating meter is mounted in sponge rubber. With ordinary open wires, it can be located up to 1000 feet from the head without materially affecting calibration. Indicator calibration is stable indefinitely, even over a wide temperature range. However, calibration can easily be adjusted in the field. Selection of the wrong range or otherwise overspeeding does not damage the indicator.

Source: Metron Instrument Company, Dept. CP, 432 Lincoln St., Denver 9, Colo. . . . or for more information check CP 4948 on handy form, pages 2 and 3.

Shows test instruments

Recorders and meters are described and illustrated in 16-page bulletin. Meters are for measuring watts; power factor; volts and amps; phase sequence; magnetic fields; welding cycles; resistance; speed; viscosity; roughness; and time. GEA-5469 is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 4949 on handy form, pages 2 and 3.

SK ROTAMETERS APPLY CONTINUOUS PROCESS PRINCIPLES IN BATCH OPERATIONS

SK Rotameters have long been employed profitably in continuous process operations for indicating, recording, integrating and controlling fluid flow by using electrical and mechanical control instruments in conjunction with the Rotameter. This method of fluid measurement and control has proved highly efficient in continuous process due to the accuracy of the Rotameter, and its simple maintenance as compared with orifices and mercury filled differential head meters.

Now, with a minimum of additional equipment, SK engineers can apply the Rotameter control circuit to batch process installations for automatic, carefully-measured operation requiring minimum supervision and maintenance.

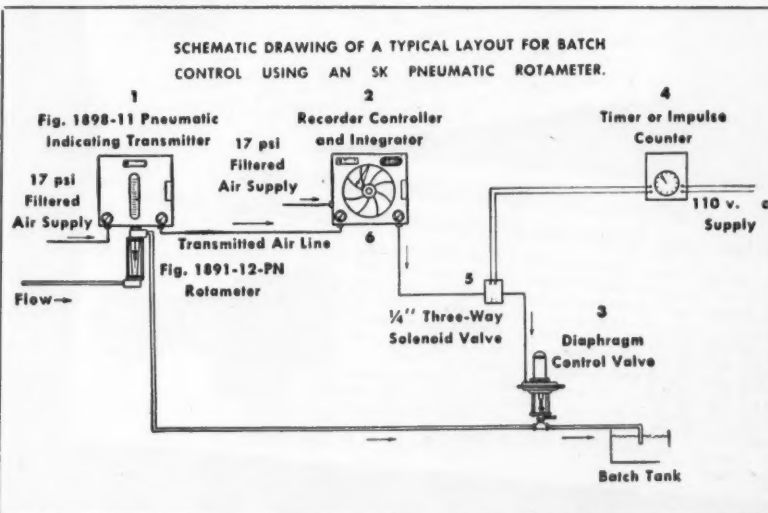
The flow diagram illustrated shows a typical layout for batch control with SK Rotameters. Many modifications of this instrumentation are possible so that it can be adapted for automatic control of practically any type of batch process. In this instance, the SK Rotameter with Pneumatic Transmitter (1) measures the rate of flow in the feed line to the batch tank and sets the pen of the Integrating Recorder Controller (2) accordingly. The Pneumatic Controller in this instrument keeps the rate of flow in the feed line constant by means of the Diaphragm Control Valve (3). The electrically operated

integrator in the Recorder Controller (2) is connected electrically with the Electric Timer or Impulse Counter (4) whose scale, graduated in volume or weight units, can be set to a predetermined value required for the batch. When this amount of fluid has passed into the batch tank the Timer (4) closes the Solenoid Valve (5) in the air line connecting the output of the pneumatic control mechanism in the Recorder Controller (2) with the Control Valve (3) which in turn shuts off the flow to the batch tank.

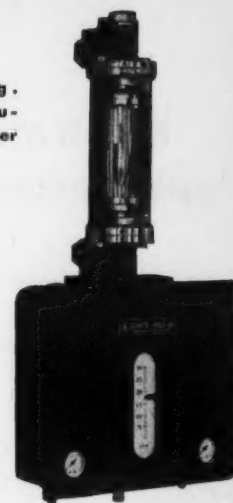
In this manner, the amount of fluid required for the batch process is accurately and automatically kept at a predetermined value which can be varied according to requirements. At the same time the integrator in the Recorder Controller (2) indicates the total amount of material consumed for any number of individual batches.

This SK Rotameter control circuit is in successful operation in a large Eastern batch processing plant, daily lowering cost through automatic control and decreasing product rejection by accurate measurement.

If you have a batch control problem, write, giving us the facts. We may be able to help you.



The SK Fig. 1891-PN Pneumatic Rotameter



The SK Fig. 1891-EL Electronic Rotameter can also be applied to batch operations.

Manufacturing Engineers

When inquiring check CP 4950 on handy form, pgs. 2-3

BECKMAN "DU" SPECTROPHOTOMETER

Long the standard research spectrophotometer for ultraviolet, visible and near-infrared measurements, the Beckman "DU" assumes even greater usefulness through the development of new accessory equipment.

Most recent additions to the diversified line of accessories are the four described at right. Detailed information on these and other accessories will be gladly sent on request. *Beckman Instruments, Inc., South Pasadena 11, Calif.*

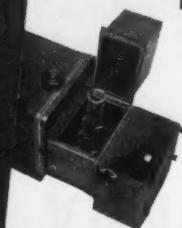
BECKMAN INSTRUMENTS
control modern industries

Radiation Meters—Special Analytical Instruments

pH Meters and Electrodes—Spectrophotometers

TEST TUBE HOLDER

Simplifies direct measurement of samples in round test tubes



A metal carriage rigidly holds test tubes from 10 mm to 25 mm (1") in diameter in special lightproof housing. A single holder accommodates the various sizes of test tubes and allows exact relocation of tubes horizontally, vertically and rotationally. An accessory unit also permits use of 2" beakers interchangeably in the same carriage.

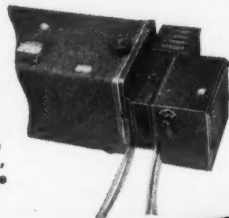
Designed for oil chemistry; Vitamin "A" analyses; clinical and medical applications, and many other routine uses.

THERMOSPACER

Enables temperature control of sample compartment

A corrosive-resistant, light-tight, metal plate contains internal coils for circulating constant temperature fluid. Thermospacers mount directly on standard instrument. Can be used singly or in combination to maintain sample compartment constant at any temperature between 0 and 100°C. The standard Model DU cell compartment can be held to less than one degree change for a ten degree change in ambient temperature.

Designed for greatest measurement accuracy with the Model DU... and for special measurements such as chemical analyses at constant temperature; the study of reaction rates at various temperatures; precise measurement of extinction values, and other applications where close temperature control is essential.



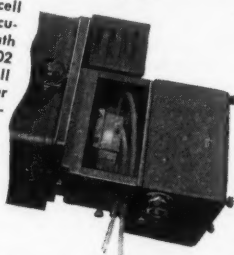
SHORT PATH FLOW CELL

For extremely short path length measurements on flowing or static samples

Consists of two flat, transparent plates which form an internal cell through which sample can be circulated without exposure to air. Path lengths from 0.05 to 2.5 mm (0.002 to 0.098 in.) available. A special cell compartment containing cell holder and precision positioning carriage attaches directly to Model DU.

Quartz optics permit full-range measurements, 220 to 1000 mμ... All critical surfaces optically polished to 1/4 wavelength for precise measurements... Extreme flatness of plates allows fluid-tight seal without gaskets or sealing compounds.

Designed for flowing or static measurements on strongly absorbing samples without dilution; on blood samples in vivo under anaerobic conditions (such as determining oxygen capacities of whole blood); for microchemical studies of reaction rates, etc.



50 cm. LIQUID ABSORPTION CELL

For long path length measurements on weakly absorbing samples

To conserve sample volume, the cell is only 25 cm. long, the light beam passing twice through the sample before reaching the phototube. A special lightproof cell compartment provides a convenient means of standardization without the necessity of using a reference cell. All optical parts are of quartz to utilize full Model DU measurement range. Liquid seals made without gaskets to avoid sample contamination. Careful design eliminates scattered light effects.

Designed for dilute solutions and weakly absorbing samples where a long path length is required. Also for use with flowing samples and for utmost sensitivity in nephelometric measurements to determine, in addition to intensity, the distribution and average size of light-scattering particles.



PROCESS INSTRUMENTATION

Makes or breaks contact when flows exceed or fall below a pre-set amount...

flow interlock finds application as safety device calling for cooling water for protection

Uses: Opens or closes an electrical contact in response to flow of water. Operates on the basis of amount of flow — independent of pressure — and is intended only for cold water applications. For use with hot water or other fluids, manufacturer should be consulted.

Features: An improved flow interlock, new design incorporates finer differential, union fittings at both ends, a bronze piston, reduced size and weight, and more wiring space in comparison with former units.

Description: In operation, device closes a contact when a flow of water exceeds a pre-set amount and opens the contact when the flow falls below the pre-set amount. It actually acts like a fuse for a circuit which depends upon water cooling



Flow interlock

for protection. It can be used as a safety device in such applications at hot water heaters, welding units, kitchen waste units, transformer cooling, induction heating, water-cooled dynamometers, etc.

Merely one screw adjustment is needed to set the circuit for any flow from 1/2 to 4 gpm. Flow differential between cut-in and cut-out of the electrical contact is 0.1 gal maximum. Interlock does not control the amount of water flow; this can be accomplished by installing a throttling or regulating valve ahead of the device.

Available with union fittings at each end to simplify installation in a line, and with strainer to keep foreign particles out. Enlarged switch housing offers ample room for simplified wiring.

Electrical rating of interlock is 10 amp at 120 or 240 v AC. Maximum line pressure device will withstand is 125 psi.

Source: Development of the General Electric Company, Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 4952 on handy form, pages 2 and 3.

Voltage of power supply is regulated...

600 volt model has excellent regulation, low ripple and output impedance

Uses: Serves as voltage regulated power supply.

Features: Excellent regulation, low ripple, and low output impedance.

Description: Model 815 supply has one regulated B supply, one regulated C supply, and one unregulated filament supply.

The B supply is continuously variable from 0 to 600 volts and delivers 0 to 200 ma. From 20 to 600 volts, the output voltage variation is less than 1/2% for line fluctuations of 105 to 125 volts and load variations from minimum to maximum current. Ripple is less than 5 mv.

C supply is continuously variable from 0 to 150 volts and delivers 5 ma. With all output voltages, variation is less than 10 mv for line fluctuations of 105 to 125

CHEMICAL PROCESSING

When inquiring check CP 4951 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION



Voltage regulated power supply

volts. At 150 volts, regulation is less than $\frac{1}{2}\%$ between 0 and 5 ma. At settings below 150 volts, internal resistance of supply will increase to a maximum of 25,000 ohms. Ripple is less than 5 mv.

Source: Manufactured by Kepco Laboratories, Inc., Dept. CP, 149-14 41st Ave., Flushing, N. Y. . . . or for more information check CP 4953 on handy form, pages 2 and 3.

All cams of process timer rotate simultaneously . . .

each cam on synchronous motor shaft is adjusted independently to provide various sequences

Uses: Controlling processing operations by means of timing on-off cycles of individual process components in relation to others in the process.

Features: Percentage calibrations on each cam face permit cams to be individually adjusted for on and off electrical periods ranging from 2 to 98% of time cycle. Cycle can be easily changed.

Description: Group of cams, operating snap-action switches, is mounted on single shaft driven by syn-

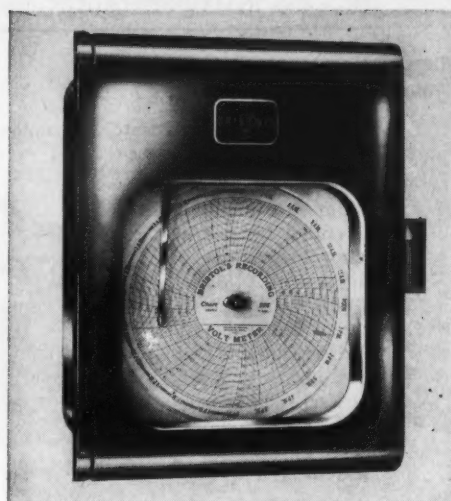


Interior of multi-cam recycling timer

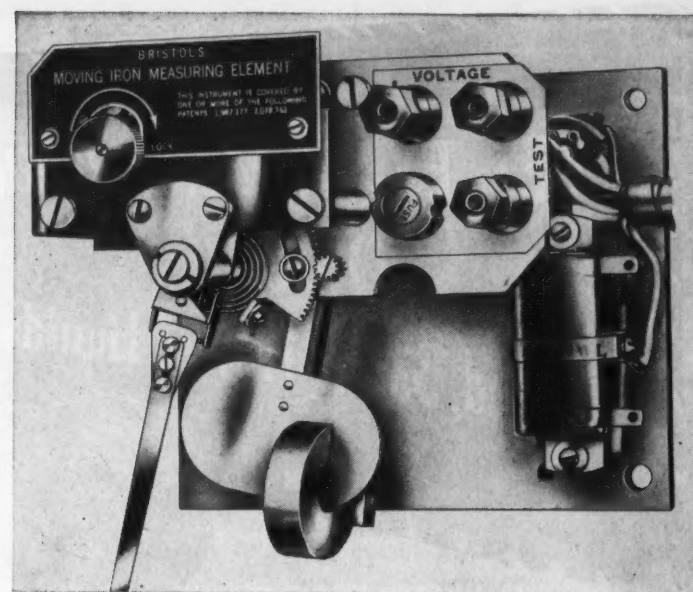
chronous motor. Thus, all cams rotate simultaneously, and continuously repeat a constant time cycle that is common to all circuits.

Nine models are available, with time cycles ranging from 1 revolution in 40 seconds to 1 revolution in 72 hours.

Source: Series MC multi-cam recycling timer is made by Industrial Timer Corporation, Dept. CP, Newark, N. J. . . . or for more information check CP 4954 on handy form, pages 2 and 3.



PERMANENT MOUNTING offered in three models: interchangeable surface and flush, surface-panel and flush panel. Note the pleasing, well-balanced appearance. Also: **PORTABLE INSTRUMENTS** are offered in two models: for setting on floor or table; for mounting on walls or poles and general service.



NEW MOVING-IRON MEASURING MECHANISM. High torque, low burden, rugged construction for assurance that the original calibration will be retained through years of service. Shock-absorbing stainless steel bearings.

NEW RECORDING VOLTMETERS AND AMMETERS ANNOUNCED BY BRISTOL

THE LATEST DEVELOPMENT IN ELECTRICAL MEASUREMENT

Outstanding for—High actuating torque... Low electrical burden... Stability of calibration... Dependable accuracy

Here is electrical measurement at its finest . . . most dependable . . . most convenient to use—the product of nearly 60 years of experience in building recording voltmeters and ammeters for almost every application.

The new moving-iron measuring mechanism is a type

known for high actuating torque and low electrical burden . . . refined by Bristol engineers for greater accuracy and ruggedness.

Other Bristol developments that assure convenience in use include the new Series 500 dust- and moisture-protected die-cast aluminum case, quick-set chart hub for easy chart changing, non-obscuring pen lifter, snap-on chart plate.

To keep up with the latest in recording instruments, send for Bulletin E1111, addressing THE BRISTOL COMPANY, 141 Bristol Road, Waterbury 20, Conn.



BRISTOL

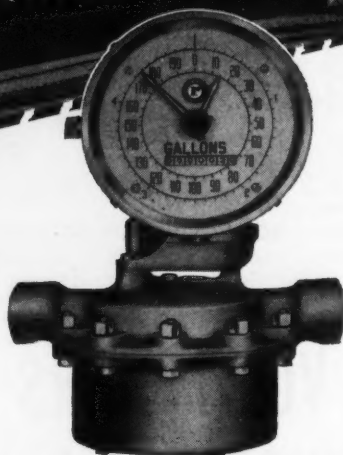
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 4955 on handy form, pgs. 2-3

**GET EXACT MEASUREMENT
QUICK!
Blend, Batch, Process Liquids**

WITH

**ROCKWELL
Industrial
METERS**



YOU CAN MEASURE most any piped liquid—oils, liquors, paints, chemicals, solutions—over 50 commodities in all. Complete list in bulletin. Ask for it now.

**CLIP COUPON
MAIL TODAY**

ROCKWELL MANUFACTURING COMPANY A5110
Pittsburgh 8, Pa.

Gentlemen: I am interested in measuring _____

(Name of Liquid)

Pipe Size _____ Working Pressure _____ psi Temperature _____ °F. max.
Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____

COMPANY _____

STREET _____

CITY _____

ZONE _____ STATE _____

METER SURETY SAVES MONEY!

It's quicker to read a Rockwell meter register than to wait for batch tanks to fill. It's easier and much more economical to meter than to fool around with weighing scales or hard-to-see stick gauges. With a Rockwell meter system you'll gain the *safety* of a closed piping system for volatile liquids; guard any liquid against contamination.

Rockwell meters are available in sizes from $\frac{1}{8}$ " through 3". They are strongly constructed from materials suitable to the fluids to be handled—will give years of accurate, dependable service. Their initial cost is surprisingly low. Get facts now. Use the coupon.

PROCESS INSTRUMENTATION

2% accuracy reported for count rate meter . . .

another, less accurate, instrument has small size for limited bench space

Uses: Model 410 count rate meter is intended for use in laboratory radioactivity work. Model 409 has a lower accuracy than the 410, and is suitable for less exacting applications such as general safety work, monitoring or searching.

Features: 410 has accuracy of 2%. Main feature of the 409 is its small size and flexibility. It measures $3\frac{3}{4} \times 4\frac{3}{4} \times 6\frac{3}{4}$ " including chromium plated steel case, making it valuable where bench space is limited.

Description: The Model 410 can be employed with the standard Geiger probe or an alpha scintillation probe. Incorporation of a Schmitt discriminator permits sine wave, square wave and pulse counting without affecting calibration.

Source: Products of Atomic Instrument Company, Dept. CP, 84 Massachusetts Ave., Cambridge 39, Mass. . . . or for more information check CP 4957 on handy form, pages 2 and 3.

Measure of physical quantities based on fine wire vibrating in a magnetic field . . .

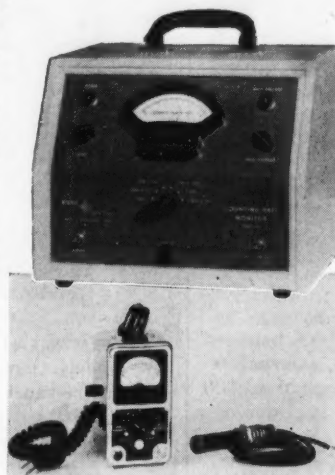
devices are used to measure flow rate, humidity, pressure, temperature, voltage, etc.

Uses: Can be used to measure the following physical quantities: acceleration, current, displacement, frequency, flow rate, force, humidity, length, magnetic intensity, mass, pressure, resistance, strain, stress, temperature, torque, velocity, and voltage.

Used in four basic forms as a measuring device: discriminators, filters, oscillators, and transducers. Some specific applications include anemometers, bolometers, counters, dynamic balancers, gravity meters, inclinometers, microbarometers, remote indicators, and sorters.

Features: Although a single instrument is not intended to fulfill all measuring requirements, specific units can be provided that offer compact size, light weight, low power consumption, high stability with changing voltage, resistance to shock or mechanical vibrations, controlled response to ambient temperature changes, high sensitivity, or extreme accuracy of calibration.

Description: The "Vibrotron" consists of a fine wire vibrating in a magnetic field and generating an alternating current of the same frequency as the natural vibrat-

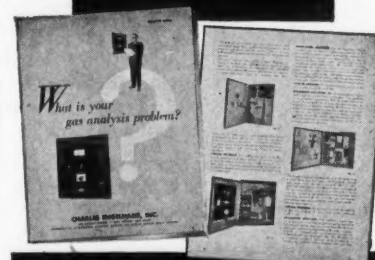


Model 409 (top) and Model 410 count rate meters

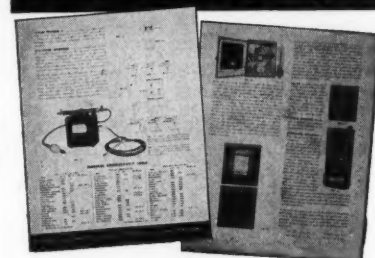
**Want to know
more about**

GAS ANALYSIS?

**Read this
New 8-page
ENGELHARD
BULLETIN**



**Look at these
Data - Packed Pages**



YOU WILL FIND a wealth of material on a wide range of gas analysis problems and their solutions in the new Engelhard 8-page illustrated bulletin. It explains how Engelhard equipment provides complete, sensitive, accurate analyses by the proven thermal conductivity method. The bulletin also contains a *valuable thermal conductivity table* that you will want to keep for handy reference. *Write for your free copy today. Ask for Bulletin 800A.*

Please send me **FREE** copy of Bulletin 800-A on Gas Analysis.

Name _____

Company _____

Address _____

City _____ State _____ X1234

CHARLES ENGELHARD, INC.
850 PASSAIC AVENUE, EAST NEWARK, N. J.

When inquiring check CP 4958 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 4956 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

ing frequency of the wire.' Any slight change in wire tension or length resulting from the action of such physical forces as temperature, pressure, displacement, etc., coupled to the wire, causes a directly measurable change in output frequency of the unit.

Source: Institute of Inventive Research, Dept. CP, San Antonio, Texas. . . or for more information check CP 4959 on handy form, pages 2 and 3.

Unauthorized men can't change setting of controller . . .

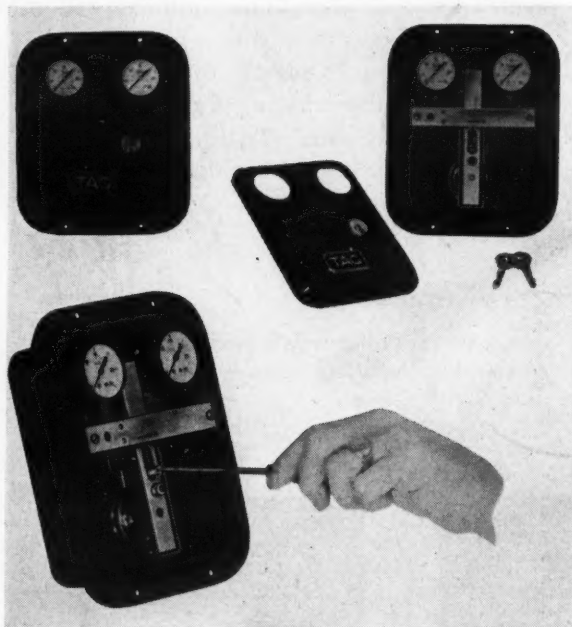
adjustment is behind locked cover of non-indicating instrument for pressure and temperature

Uses: Non-indicating controller for temperature and pressure.

Features: Has lock on cover so that control point settings can only be changed by authorized personnel with key. Cover must be removed to change setting. Previous models could be adjusted from outside the cover.

Description: Control setting mechanism is a spindle with slotted tip placed entirely behind the lock cover. Adjustment is made by unlocking and removing cover, inserting screw driver in slot of spindle, and turning in desired direction. Once set, control cannot be changed by unauthorized personnel.

Lock is conveniently situated at middle right side of case to line up with a bar mounted horizontally on the



Control setting of instrument cannot be changed unless locked cover is first removed

inside. Cover is lined with rubber gasket, making the instrument dust and weather proof. Controller is well suited to many automatic control applications, either direct or reverse acting. It measures $5\frac{3}{4}$ by $7\frac{1}{4}$ inches.

Source: Model 8352, Type 1, is made by Tagliabue Instruments Division, Weston Electrical Instrument Corporation, Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. . . or for more information check CP 4960 on handy form, pages 2 and 3.

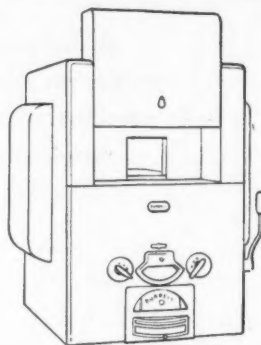
JUNE, 1951

FOR SCIENTISTS EVERYWHERE

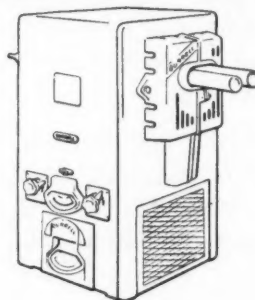
ELECTRIC FURNACES

by **BURRELL**

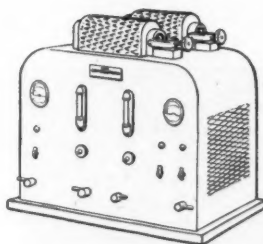
To you—the chemists, metallurgists and laboratory technicians with whom we have been privileged to work through the years—belongs the credit for Burrell's leadership as a supplier of electric furnaces for analysis, control and production. You told us your needs; we developed apparatus to meet those needs. As a result of this cooperation, many improvements have been made for easier operation, greater safety and dependable operation. Today, Burrell offers as comprehensive a line of high and low temperature furnaces as can be found in any one source.



BURRELL UNIT-PACKAGE BOX AND MUFFLE FURNACES are designed for either low or high temperature operation. In a range from 600° F. to 2000° F., you can perform efficiently such functions as ashing, drawing, igniting, tempering. Above 2000° F. and on into the high white, these versatile units are equally adaptable for such services as sintering, melting, clinkering, fusing and high speed hardening. All are ruggedly built and easily operated. Temperature control is automatic. Burrell Bulletin No. 315 provides all needed data about five different models.



BURRELL UNIT PACKAGE TUBE FURNACES are for determining carbon or sulfur in ferrous analysis and any other similar procedures which require continuous operating temperatures up to 2650° F. Various models are offered to answer individual requirements for limited use, average use or high speed production. All are self-contained and fully equipped furnace units, ready for connection to your power supply. They are easy to install and simple to operate and will reward users with long, trouble-free service. Ask for Burrell Bulletin No. 310.



BURRELL COMBUSTRON is a new high frequency induction heater for rapid determination of carbon-by-combustion analysis in steel. Accuracy with coarse, fine or pin-type samples has been proved by extensive tests. The Combustron is always ready for continuous or intermittent use. It is a self-contained, fully equipped instrument ready to plug into the power supply and put to immediate use. No pre-heat time is needed; you insert the sample and snap the switch. A one tube model is offered for average use, a two-tube model for heavier production. Write for Burrell Bulletin No. 319.



BURRELL CORPORATION

2223 FIFTH AVENUE, PITTSBURGH 19, PENNSYLVANIA

MANUFACTURERS AND DISTRIBUTORS OF SCIENTIFIC APPARATUS AND LABORATORY CHEMICALS

When inquiring check CP 4961 on handy form, pgs. 2-3

Cuts off fuel to oil burners in event of Ignition failure . . .

electronic combustion safeguard can be used with thermostat to assure satisfactory oil temp

Uses: Flame failure safeguard for commercial oil burners.

Features: Positive protection against combustion failure is afforded — if the gas pilot doesn't ignite, the fuel oil valve cannot open. . . if the oil flame doesn't ignite, fuel supply is cut off.

Description: Approved by Underwriters' and Factory Mutual Laboratories, coordinated equipment consists of a switch-amplifier-contactor unit, phototube holder, and electrode holder. After cut-off, motor continues to operate for 30 sec to purge the nozzle or cup of unburned fuel to prevent carbonizing and reduce field servicing. The system is then locked against further operation until manually reset.



Electronic combustion safeguard

An oil temperature thermostat can be used with the circuit in control to assure satisfactory fuel temperature before the starting cycle begins. Upon resumption of service following power failure, low water cut-off, or limit control operation during the starting cycle, the oil valve cannot open until the program switch recycles.

When continued operation of the burner is prevented by ignition failure, a positive lock-out mechanism is actuated and a light on the cabinet cover indicates that the equipment is in lock-out position. Operation cannot be resumed until the reset button is pressed.

A self-checking circuit prevents starting of the equipment unless the photoelectric detector, pilot protector, and electrode are in proper working condition. For inspection and test, all components of the system can be easily removed from the front of the panel without disturbing incoming or outgoing connections.

Motor circuit is controlled directly by a built-in contactor for motor ratings up to and including 1/2 hp, 110/120 v, single phase current. A complete line of magnetic switches is available with the master control unit for larger motors and multi-phase operation.

Source: Electronic combustion safeguard is a development of the General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 4962 on handy form, pages 2 and 3.

Gauging moving sheet material is accurate to within a few millionths of an inch . . .

beta ray gauge doesn't contact material; independent of chemical or physical properties of material

Uses: For continuously recording variations in the thickness or weight-per-unit-area of a wide variety of sheet materials as they move on production lines. Steel, aluminum, brass, rubber, plastics, and coated textile manufacturers are finding applications for it.

Features: Outstanding characteristics of gauge are its ability to measure accurately and continuously to a few

Another Mason-Neilan Basic

In 1944 — The C_v Concept — Universally Used Today

NOW! Point 4 Factor Trim

A thorough study of reduced capacity trim over the past decade has resulted in a new concept of the entire subject, leading to conclusions which are sound from both engineering and manufacturing standpoints and which simplify the problem for the user.

Mason-Neilan now offers *Point 4 Factor Trim* based on the following general principles:

1. Since a properly designed wide range control valve will control satisfactorily near its stroke limits, a vast majority of flow problems can be handled by valves with full capacity trim. Therefore, unless the required reduction in capacity is appreciable, no advantage is obtained by the use of reduced capacity trim.
2. The only practical reduced capacity trim design is one which extends the minimum controllable flow as well as reducing the maximum. A simple analysis shows that to

extend the minimum controllable flow it is necessary to reduce the seat ring diameter.

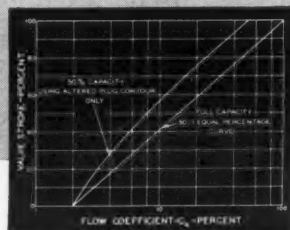
3. Only one reduction is practical for a given size top-and-bottom guided, double or single seated control valve. The optimum reduction consistent with retention of mechanical strength is approximately 60% of full capacity; hence the capacity of a valve with reduced capacity trim should be .4 of full capacity. The logical description of this trim is therefore —

Point 4 Factor Trim

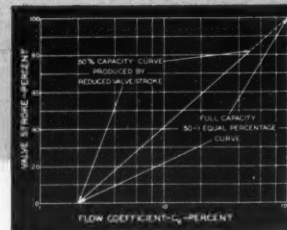
There are a number of valid reasons for specifying reduced capacity trim in control valves for industrial processes. Mason-Neilan *Point 4 Factor Trim* provides standardiza-

tion, plus convenience in selection and procurement in handling these unusual applications.

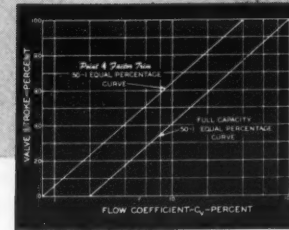
Complete details are available on request.



Effect of reducing maximum flow by altering plug contours only.

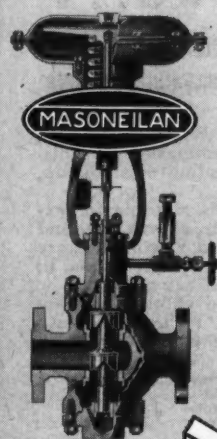


Note that same reduction of maximum flow can be obtained by reducing stroke by means of positioner adjustment or altered spring characteristic.

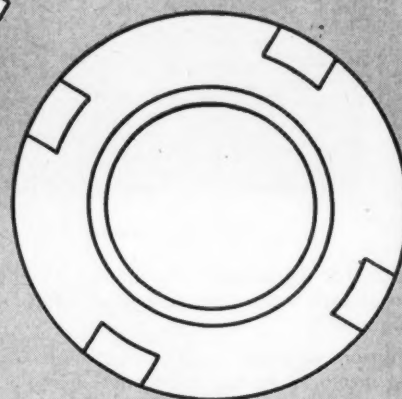
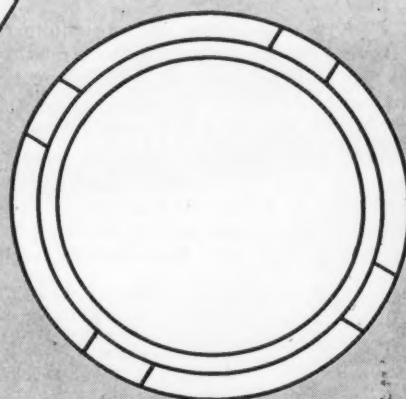


Effect of *Point 4 Factor Trim* obtained by using reduced plug and seat ring diameters.

c Contribution to Simplified Valve Selection



Full capacity Percentage V-Port plug and seat ring.



Point 4 Factor Trim

1. Retains the mechanical strength, stroke, stem and guide diameters of full capacity trim.
2. Retains full body size with reduced diameter plug and seat ring.
3. Is available in V-Port and solid turned plug designs, for double or single seated valves — sizes 1½" to 8" inclusive. Rated C_v is 40% of full capacity of 10,000 Series Control Valves.

Point 4 Factor Trim Percentage V-Port plug and seat ring.

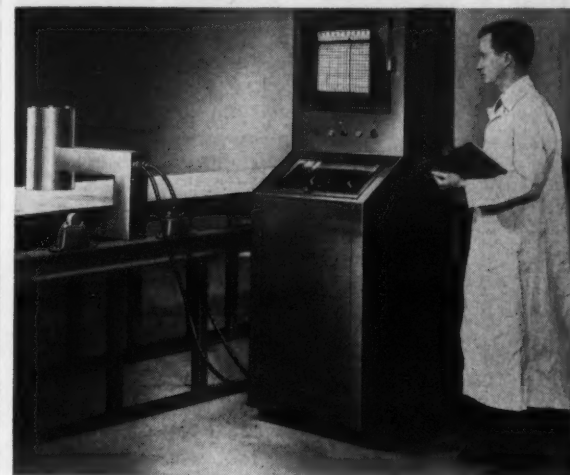
MASON-NEILAN REGULATOR CO.

1203 ADAMS STREET, BOSTON 24, MASS., U. S. A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso • Boise • Albuquerque • Charlotte, N. C. • Los Angeles • Denver • Appleton, Wisconsin • Corpus Christi • New Orleans • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 4963 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION



Gauges sheet materials as they pass on conveyor

millionths of an inch without contacting the material being gauged, its ability to operate continuously without any standardization or recalibration, its insensitivity to changes in steel composition, and its high degree of stability under adverse plant conditions.

Description: Basic components of gauge are a source of beta radiation, a radiation detector, and a recording device. Material being measured is run through a gap between the source and detector, thus preventing a portion of the source radiation from reaching the detector in proportion to the weight per unit area of the material. Readings directly in terms of thickness can be made on materials of constant density, and are independent of variations in properties of test material.

Operation consists of merely changing settings on two dials recessed in the console whenever manufacturing thickness specifications are changed. No other adjustments are required. All causes of drift or erroneous readings are compensated for automatically. A scanning mechanism can be used with the gauge to give readings across the width of the sheet. Scanning can be continuous or intermittent with the detector unit set to remain in a stationary position at any point along the scanning width.

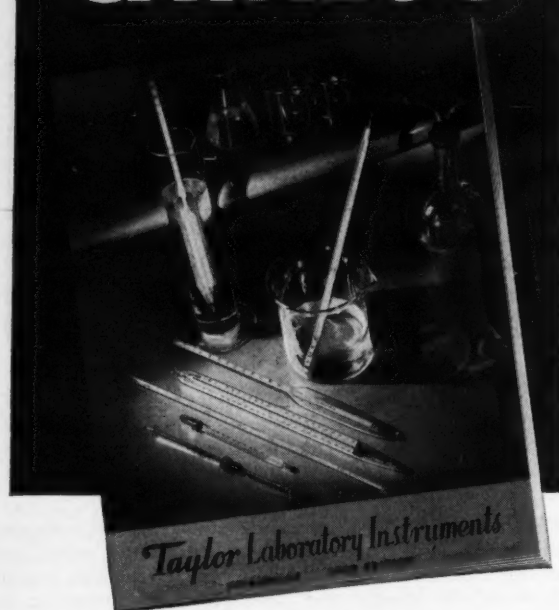
Source: "Beta Ray Gauge" is a development of Industrial Nucleonics Corporation, Dept. CP, 1205 Chesapeake Ave., Columbus 12, Ohio. . . or for more information check CP 4964 on handy form, pages 2 & 3.

High pressure applications cited for equipment

Laboratory and industrial high pressure equipment is presented in 28-page brochure. Equipment is for the production, utilization, and measurement of pressures from 5000 to 200,000 psi. Units include pressure controllers; dead weight testers; electronic pressure elements; various fittings; pressure indicators; single-acting, double-acting, and moderate pressure intensifiers; pressure pumps; reaction chambers; pressure recorders; tubing; and various valves.

Added feature is stress-and-strain table. Units are described roughly, then specified in tabular form. All are illustrated by photographs and schematic drawings. "High Pressure Equipment" is issued by Harwood Engineering Company, Inc., Dept. CP, Walpole, Mass. When inquiring specify CP 4965 on handy form, pages 2 and 3.

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When inquiring check CP 4966 on handy form, pgs. 2-3

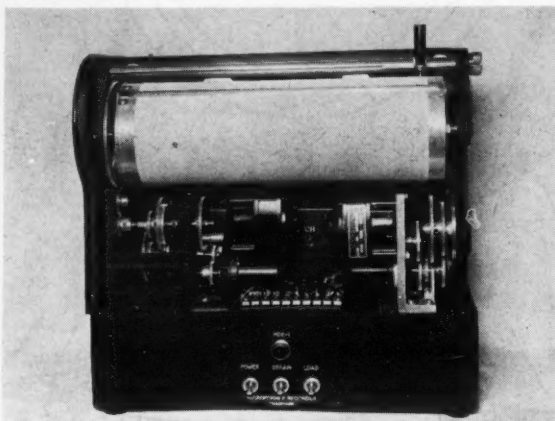
PROCESS INSTRUMENTATION

**Simultaneously plots
two variables on
X-Y coordinates . . .**

recorder can be used with any of 25 or more strain followers

Uses: "X-Y" type recorder for plotting automatically on rectangular coordinates the simultaneous relationship between any two variables that can be made to actuate any of 25 or more of maker's Microformer type strain followers (miniature variable transformers having core of 0.120").

May also be used with any testing machine in which hydrostatic pressure in either the loading or weighing system is proportional to load applied to the specimen. For these applications, separate Bourdon tube units are



"X-Y" type recorder

available for permanent attachment to the hydraulic system of each testing machine with which the recorder may be used.

In addition, recorder may be used with some types of testing machines having mechanical loading and weighing systems.

Description: MD-2 recorder is similar in size and appearance to other models designed for attachment to B-T-E testing machines.

Displacement of the core of an external, sensing Microformer upsets the balance of a self-balancing bridge of which it and the recorder Microformer are a part. The unbalanced signal is amplified by an electronic circuit and drives a servo motor. This moves the core of the recorder Microformer to the same position as the external core, thus re-establishing electrical balance, and operating the recorder drum or stylus.

Sensing Microformer core movements of 0.03 and 0.06" can produce full scale (10") displacement of the stylus, and core movements of 0.03, 0.06, and 0.120" can produce drum rotation of 10". Each of the recording elements, when used with an external Microformer of standard precision type, has a recording sensitivity of 0.000015". Movement of the external Microformer core can be recorded to an accuracy within 0.2% of the recorder scale range. Full scale 10" response of the stylus across the chart can be obtained in approximately 6 seconds on the full scale range, and approximately 3 seconds on the half scale range. Full scale 10" rotation of the chart can be obtained in 20 seconds on all three ranges. Higher speeds may be obtained on special order.

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**As Simply, Quickly and Easily
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Just a flick of a switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, usually takes *less than a minute*.

Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials, Brookfield Viscometers are portable and plug in any A.C. outlet — can be used in Lab, Plant or both.

Write today for fully illustrated catalog showing Brookfield Viscometers adaptable to any viscosity problem from less than one to 32,000,000 centipoises.

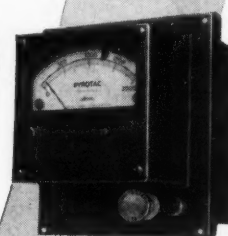
BROOKFIELD COUNTER-ROTATING MIXER — Two concentric, oppositely rotating shafts, propeller equipped and driven by two motors, produce an annular flow and up to 48,000 scissor-like cuts/minute. Enable exceptionally fast, effective and efficient laboratory mixing. Not a "stirrer." Write for Brookfield MIXER brochure.

Brookfield ENGINEERING LABORATORIES, INC.
210 Porter St., Slough, Mass.

When inquiring check CP 4967 on handy form, pgs. 2-3

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Protects
YOUR
Investment**

**Alnor Type 5200 Pyrolac
excess temperature cut-off.**



The Alnor Pyrolac excess temperature cut-off offers you low-cost, automatic protection against damage due to excessive temperatures . . . safeguards your investment in heating equipment and materials in process.

Simple in operation, the Pyrolac constantly indicates temperature of the heater equipment and stands ready to sound an alarm and/or shut down heater circuits at a pre-set maximum safe temperature. Available in scale ranges from 0°-600° F. to 0°-3000° F. and Centigrade equivalents.

An Alnor quality instrument, featuring laboratory precision and husky construction; yet the price is only . . .

\$8500 — far lower than for ordinary instruments of this type.

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Room 504, 420 N. La Salle Street
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Alnor

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FOR EVERY INDUSTRY**

When inquiring check CR 4968 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Recorder dimensions are approximately 14 x 10 x 13" and it weighs 50 pounds.

Source: Development of the Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. . . . or for more information check CP 4969 on handy form, pages 2 and 3.

Ultraviolet to the infrared within spectral range of grating monochromator . . .

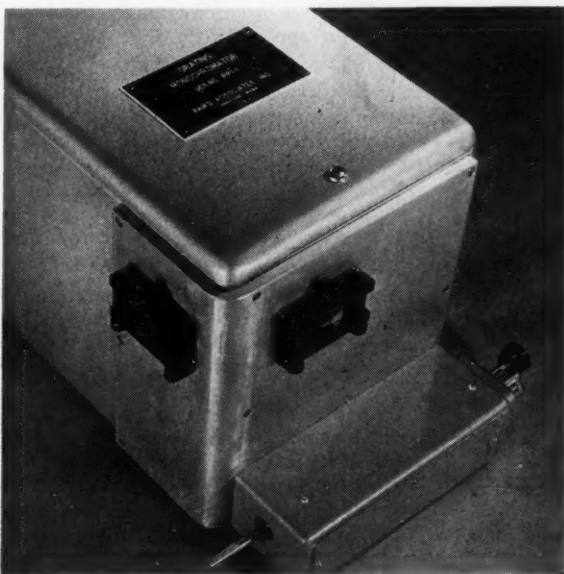
spectral purity is equal to, or better than, double chromators of the prism type

Uses: Grating type monochromator for use over the spectral range from the ultraviolet to the infrared.

Features: Inherent in grating type instruments, spectral purity is equal to, or better than, a double monochromator of the prism type.

Description: Overlapping orders of wavelength — common to grating type devices — are eliminated with the aid of appropriate filters or use of a fore-prism of low dispersion.

Amplifier is designed to operate in conjunction with a light chopper and synchronous generator combination.



Grating monochromator

The input impedance is variable over a range sufficient to match either a photomultiplier or a photoconductive cell (sulfide or telluride). Maximum gain is about 10^6 .

Use of a synchronous rectification system provides accurate linearity of the output DC voltage with respect to light intensity incident on the receiver, and permits attainment of an effective overall band width as small as 1/20 cps. Power supply provides regulated voltage for operation of a photomultiplier tube. Total voltage is variable between zero and 840 v in steps of 105 v. Sensitive elements are prepared on small rectangular pieces of glass provided with contact electrodes.

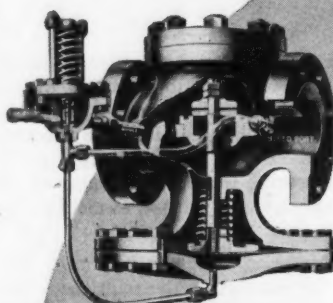
Source: Announced by Baird Associates, Inc., Dept. CP, 33 University Rd., Cambridge, Mass. . . . or for more information check CP 4970 on handy form, pages 2 and 3.

JUNE, 1951

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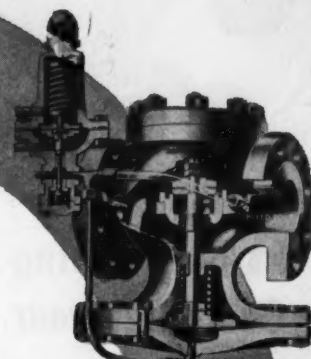
- Single-seat Packless Construction
- Large Balanced Metal Diaphragm
- Sensitive Pilots
- SECO Metal Seats and Discs
- Springs out of path of steam
- No dismantling for inspection



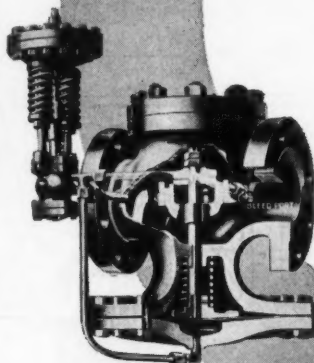
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BACK PRESSURE CONTROL—Wide selection of sensitive pilots to meet exacting requirements. Initial pressure closing, guaranteed to shut tight. Packless construction, metal diaphragms.

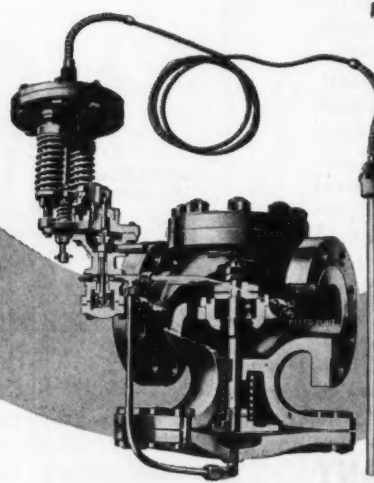
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for complete details on
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regulating valves



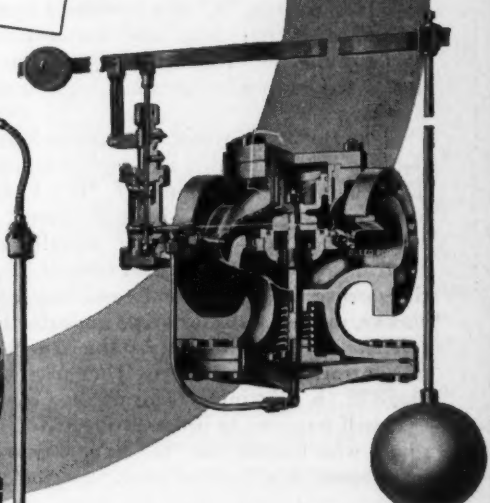
DIFFERENTIAL PRESSURE—Accurate control of delivery pressure at a constant, adjustable differential from 3 to 150 psi above another source of fluid pressure.



PUMP GOVERNOR—Constant or excess pressure control for steam pumps. Steam pressures to 600 psi 750 F, pump discharge pressures to 2000 psi.



TEMPERATURE REGULATING—Combined temperature and pressure control. No separate reducing valve required. Shuts tight, will not wiredraw or be damaged by overheating. Sizes to 12 in.

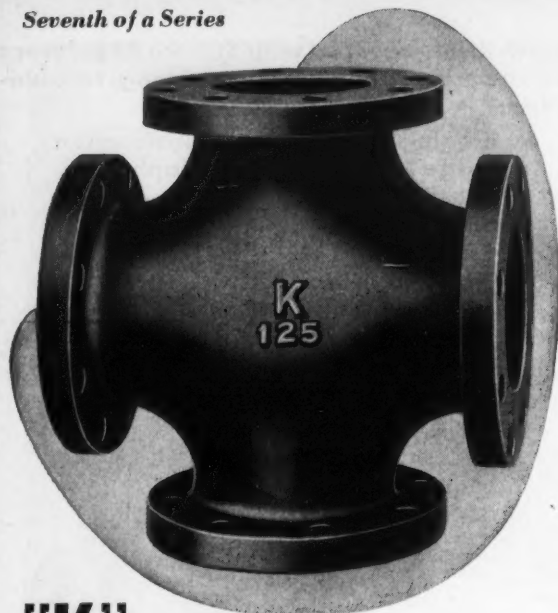


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SPENCE ENGINEERING COMPANY, INC.
WALDEN, NEW YORK

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In using "K" Fittings, you are well fortified against installation and service troubles. The precision machining of "K" Fittings assures convenient make-up, tight joints, and symmetrical runs. Scientific metallurgical control, skillful molding, and critical inspection assure fittings without sand holes, cold checks, uneven walls, or other imperfections.

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When inquiring check CP 4972 on handy form, pgs. 2-3

Hydraulic Power and Seal for Agitators in Synthetic Rubber Reactors

Central pumping unit supplies oil for 12 individual motors and for sealing reactor seals

THE reaction vessels, charging procedures, cooling of feedstock, and the refrigeration equipment employed for continuous emulsion polymerization of "cold" rubber at the Government Laboratories have been described briefly before. Since interest has been expressed in the type of drive and the bearing-seal units because of the possibility of other applications, these assemblies are described more fully in this article.

The hydraulic-motor drives and bearing-seal units have been used not only on the reactors of the multistage polymerizer, but also on 5- and 20-gallon reactors for batchwise polymerizations where variations in the agitator speed were desired. However, since the most versatile and complete application has been employed for the multistage polymerizer, the description of the assemblies is based on this system.

The basic system (Figure 1) consists of a positive-displacement oil-driven motor which is connected directly to the agitator shaft of the reactor. The torque applied to the agitator shaft may be varied by changing the pressure of the oil supplied to the motor; the speed of agitation is controlled by the rate of flow of oil through the motor. The auxiliary equipment, such as the integral seals for the drive shaft, the heat exchangers for temperature control of the driving or sealing oil, and the rotameter system for controlling the agitator speed, has been designed and arranged especially for this application.

The central pumping unit consists of four oil pumps of the vane-displacement type connected in parallel; these are immersed vertically in the sump of a common receiving tank (150-gal capacity) and are driven by four 7.5-hp electric motors mounted on top of the receiving tank.

This pumping unit was placed in a non-hazardous area, thereby eliminating the necessity of having explosion-proof electrical equipment.

The switches for the electric motors, together with corresponding off-and-on indicating lights, and the pressure recorder for the output oil are located in a convenient place in the operating or reactor area. Depending upon the load requirements, shown by a drop in line pressure, only the pumps needed are put into operation; these are started or stopped manually by the operator. A hydraulic relief valve, with an appropriate by-pass line, is installed in the output line from the pumping unit to maintain the oil at the desired pressure for delivery to the hydraulic motors.

These hydraulic motors are fastened to the top of the sealing units by flange. The projecting drive shaft from the motor is coupled to the agitator shaft extending almost to the top of the body of the sealing unit. The oil-retaining washer furnished with the motor prevents free flow of oil between the sealing unit and the motor. The flow of oil to the motor is controlled by a valve; for this particular application the pressure is maintained at 600 psi.

The oil discharged by the motor is passed through a rotameter, which measures the rate of flow. The pressure generally

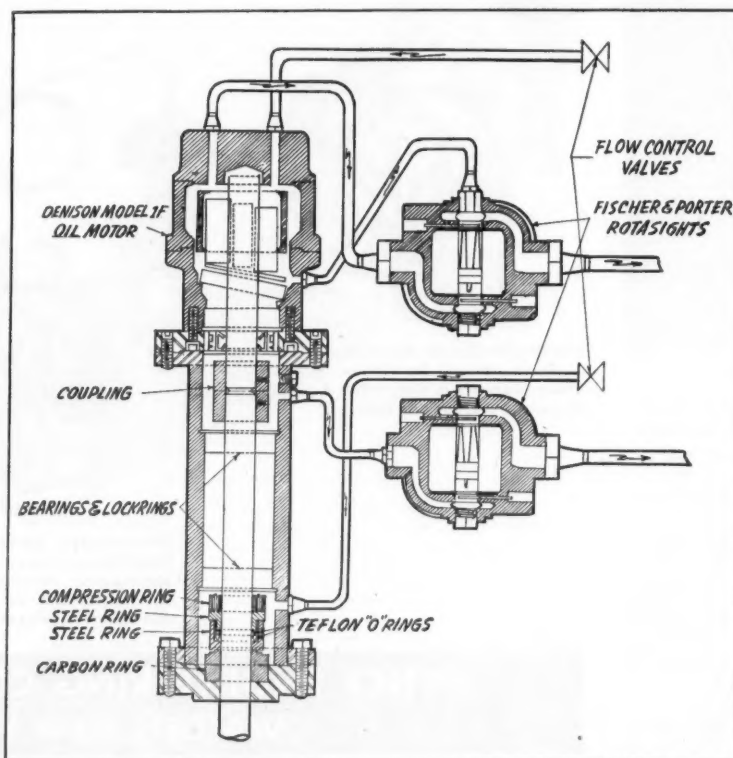


Figure 1 — Cross-section of sealing assembly, oil motor and rotameters

encountered in the return line at the rotameter is less than 4 psi. A drain line for the oil that leaks by the pistons and rotor of the hydraulic motor carries the oil to the top of the rotameter; the flow rate of this oil is not measured.

The oil that is returned passes through a heat exchanger before it enters the oil reservoir of the central pumping unit, and is held at a temperature that is 10° to 15°F higher than the operating temperature in the reactors. The hydraulic fluid recommended by the manufacturer is a lubricating oil that has a viscosity of about 225 sec (Saybolt Universal) at 130° to 140°F (the operating temperatures of the motors in most industrial applications). To conform to conditions of the application at the Government Laboratories, different oils are used for each temperature requirement; the oil is selected so that its viscosity is about

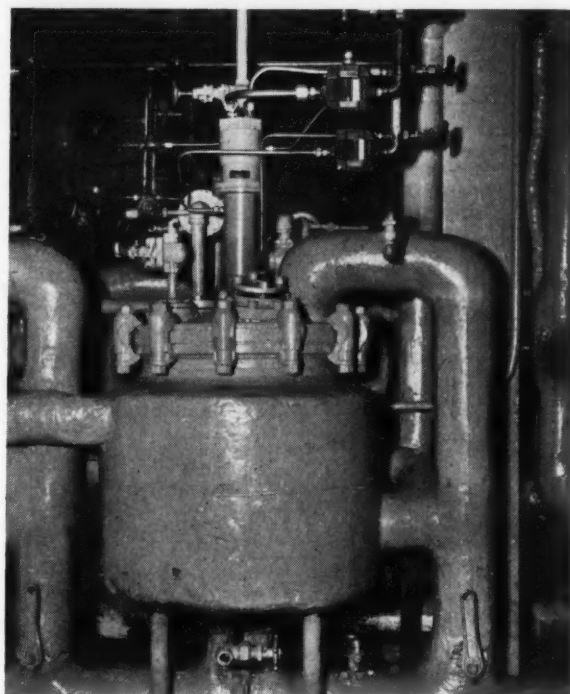


Figure 2 — Reactor with oil-powered agitator drive system described in this article

225 sec (Saybolt Universal) at the temperature involved. Since the pressure and temperature, hence the viscosity, are constant, the rate of flow through the positive-displacement motor can be translated into revolutions per minute and the calibration scale on the rotameter can be read directly in rpm. A flow of 0.42 gallon of oil per minute is equivalent to 100 rpm of the hydraulic motor, and tests show that the motor will deliver about 2 horsepower at 1500 rpm when the oil pressure is 600 psi.

The sealing unit, which is flanged to the top of the reactor, has a conventional carbon seal at the bottom. Whereas the conventional sealing units of this size have only one supporting and aligning bearing, the sealing unit designed at the Government Laboratories has two sets of ball bearings; one is located just above the top of the carbon seal and the other is near the top of the unit with enough space allowed for coupling the agitator shaft to the motor shaft. These bearings insure positive alignment and, regardless of the side thrust on the agitator shaft in the reactor, the carbon seal cannot be lifted. The bearings also support the shaft

(Continued on page 68)



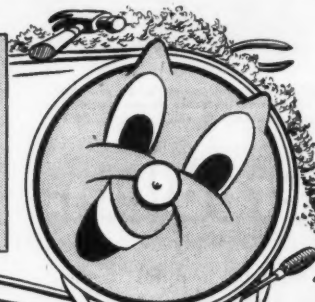
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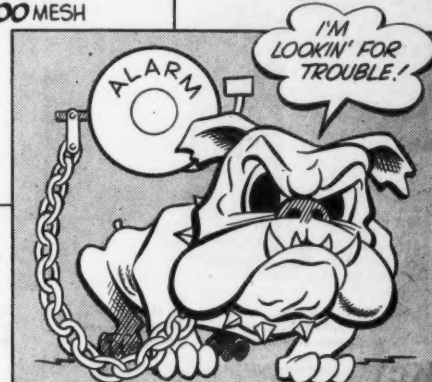
RECOVERY OF EXPENSIVE TOOLS WITH AN ERIEZ ATOMAGNET PULLEY PAID FOR THE UNIT IN A YEAR. THE PULLEY AUTOMATICALLY CLEANS IRON AND STEEL FROM MATERIALS BEING CONVEYED ON BELTS.



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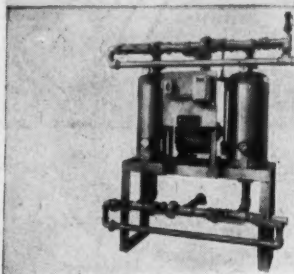
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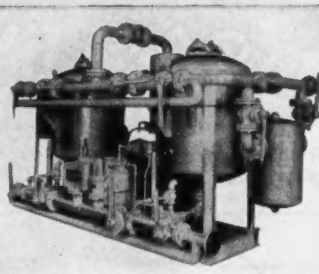
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When inquiring check CP 4973 on handy form, pgs. 2-3

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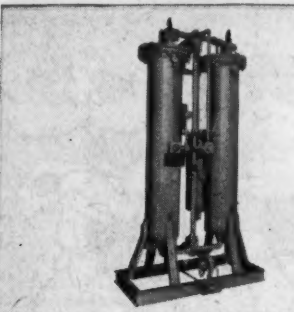


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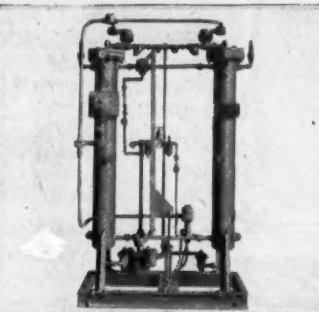


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Kemp Dynamic Dryers are versatile — offer manual, semi-automatic or automatic operation. Desiccant is especially selected and compounded for the type drying you require. With Kemp you can dry air, gases or liquids, eliminate moisture in materials, and control humidity in large or small areas. Gas, electric or steam regeneration is supplied as standard equipment.

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When inquiring check CP 4974 on handy form, pgs. 2-3

IDEAS

Radioactive Isotopes evaluate polish for autos...

efficiency indicated by counting radiation of tagged coat

Another application for radioactive isotopes has been found. A Cambridge, Mass., manufacturer of a liquid automobile polish has used cobalt-60, from Oak Ridge, in checking the performance of his product as to lasting ability.

The polish and another competing polish were tagged with the isotope. Sensitive detecting instruments counted the radiation emitting from duplicate weighed amounts of each polish to set a standard.

The two radioactive polishes were then applied to 1" steel discs painted with different color car finishes in both laquer and enamel. Samples were washed with water, soap and water, a solvent closely resembling gasoline, an alkaline wash, and acid wash, and were exposed to a moist oxygen atmosphere for 18 hours and then washed.

After each test, polish remaining was estimated by again counting the radioactivity.

(Tests were conducted by Tracerlab, Inc., 130 High St., Boston 10, Mass.)

Measurements simplified in testing pump design performance...

torque measuring instruments
supplement dynamometers

Measuring comparative performance achieved by different pump designs is simplified by supplementing dynamometers with improved torque measuring instruments. Coupled in the drive shaft, a small take-off device provides an accurate and continual indication of torque and power delivered to pumps. A portable, self-contained indicator, calibrated in foot-pounds, is wired to the take-off and may be placed anywhere convenient to the observer.

Typical of such test set-ups is one for a single stage of a boiler feed pump. Purpose of this test is to improve efficiency and performance of pumps. In this test, the pump is driven by a turbine instead of an electric dynamometer.

Another application involves performance characteristics and power requirements in pumping an oil of high viscosity (1,000,000 SSU at 67°F). Gear pump is driven

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PROTECTS 4 TO 8 DANGER SPOTS WITH ONE INSTALLATION!

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Tube Sampling Type - Indicating or Recording

For use where a dangerous concentration of gases will not reach an explosive level faster than the touring cycle, and where the vapor cannot condense in the sampling lines.

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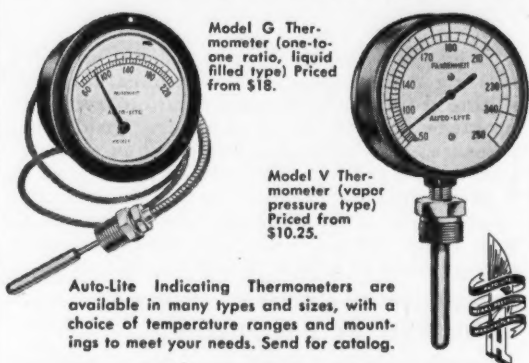
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INDICATING & RECORDING THERMOMETERS

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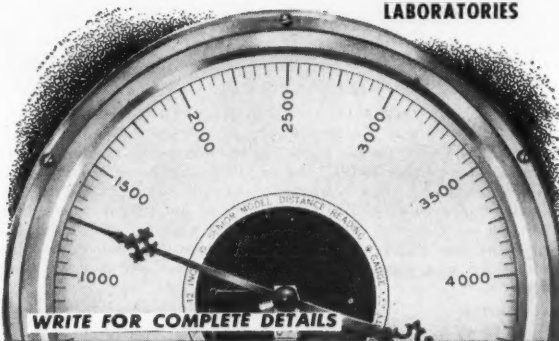
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When inquiring check CP 4978 on handy form, pgs. 2-3

IDEAS

through a gear box and torque-meter shaft at speeds ranging from 50 to 200 rpm against delivery pressures up to 600 psi. This arrangement eliminates calculations involving efficiencies of motor and gear box.

Torque-meters used in these tests were manufactured by Baldwin-Lima-Hamilton Corp. They are based on the Baldwin SR-4 bonded resistance wire strain gage. SR-4 torque-meter is essentially a short length of shaft, to which a group of special strain gages are bonded so as to form a Wheatstone bridge.

The corners of the bridge are connected through slip rings on shaft to stationary brushes and thence to an indicator. Horsepower, a simple function of torque and shaft speed, is readily computed. Brush friction in the instrument absorbs negligible power.

Experimental work was done to check accuracy and dependability of this method of measurement. This included both static and dynamic studies.

In static tests, a simple, home-made calibrator was constructed. This consists of a center mounted lever arm and torque-meter mounting bracket. The lever arm extends four feet each side of the center mount.

Dynamic tests were made to study character and magnitude of torque pulsations, as read on the meter, which were causing inconsistencies in some measurements. This work was done with a cathode ray oscilloscope which gave the amplified torque signal in the carrier-frequency stage of the torque indicator. It was discovered that the pattern of the oscilloscope was disturbed by stray electrical fields.

This problem was solved by grounding the drive shaft, which was apparently insulated enough by the film of lubricant in the bearings to produce a high resistance to ground and thus interfere with the dynamic torque observation on the cathode ray screen. Grounding was provided by a flexible metal strip wiping the torque-meter shaft and held by a bracket on the case of the brush mounting unit. Case is grounded either by the stand that supports it or by a special ground wire.

(Summarized from report of Baldwin-Lima-Hamilton Corp., Dept. CP, Eddystone, Pa., on use of its measuring instruments by Research and Development Department of Worthington Pump and Machinery Corp.)

What every Chemical Engineer should know about Pressure Filters

Pressure filters are probably the most commonly used filters in the processing industries and are, with few exceptions, intermittent or batch filters. Although there are many types of pressure filters on the market—disc, porous stone, cartridge, etc.—the plate-type and leaf-type are the most generally used for medium and large-scale operations.

PLATE-TYPE FILTERS

The best known and most widely-used of the plate-type is the plate-and-frame filter press which usually employs filter cloth as a base for the filter cake. Also well known are the horizontal-plate filters which have certain definite advantages in small sizes for handling relatively small batch operations, but which are high in cost and unnecessarily bulky when large filter areas are required.

LEAF FILTERS

There are many different types of pressure-leaf filters, such as the horizontal leaf, rotating leaf, and vertical leaf. Probably the simplest in design and most practical in application is the Niagara vertical leaf filter, employing all-metal filter leaves covered with permanent, fine-mesh wire filter cloth with openings small enough to quickly take a precoat of even the finest commercial filter-aids.

Limitations of this filter are that (1) It is a clarifying filter and cannot efficiently handle slurries with high percentages of solids; (2) It is not ideally suitable where the cake, not the liquid, is valuable.

However, it is ideally suited to most applications where plate-and-frame presses and other pressure filters are used for clarification purposes. Designed to combine most of the advantages of these other filters, it overcomes many of the disadvantages, particularly of the filter press, such as excessive time and labor for cleaning, poor cake-washing characteristics, bulky construction, uneven pressure distribution over total area, product leakage, non-uniform pre-coating, etc.

ADVANTAGES

Main advantages of Niagara Filters are:

- (1) Totally enclosed, high-pressure filtration.
- (2) Elimination of all labor and expenses connected with handling, washing, replacement, etc., of filter cloths.
- (3) Higher rates of flow per unit filter area.
- (4) Complete, sparkling filtrate clarity.
- (5) Excellent cake-washing characteristics (almost true displacement washing).
- (6) Greatly reduced floor space requirements.
- (7) Rapid, easy cleaning and cake removal.
- (8) 100% corrosion-resistant alloy metal construction . . . stainless steels, other metals if required, at reasonable cost.
- (9) Easily jacketed for high-temperature operation.
- (10) Maintenance almost eliminated, since there are no moving parts.
- (11) One-man operation and handling, even of a battery.
- (12) Unit filter area up to 500 square feet.
- (13) Lower first cost where corrosion-resistant materials are required.

LOW OPERATING COST

This filter, although relatively new in its application to the chemical and processing industries, is rapidly replacing many of the traditional, old-style pressure filters. This trend is the result of an increasing tendency to use corrosion-resistant equipment and the realization by plant operators that lower equipment operating and maintenance costs must be achieved to keep profits up in the squeeze between increased labor and material costs and an increasingly competitive price situation.

For additional data and information on the Niagara pressure-leaf filter, the new self-cleaning "Auto-Sluice" filter, and Niagara's pilot filter rental service, write Niagara Filter Corporation, 3083 Main St., Buffalo 14, N. Y.

When inquiring check CP 4979 on handy form, pgs. 2-3

IDEAS

Lighting is important to production

Twenty-four-page report summarizes the vital present-day services of illumination in industrial production, public safety, research, and other fields.

Report is broken down into 5 sections: production lighting (the importance of proper light in quality control is evident in typical reports showing a decrease in production errors up to 50%); office lighting, which can increase efficiency by as much as 37%; protective lighting (the proper use of artificial light in outdoor areas); public safety lighting of thoroughfares; and education lighting.

In addition to complete statistics on the effects of lighting, this report contains several comprehensive charts and graphs, illustrating many of the important points brought out. To obtain "Lighting and the Nation's Welfare", remit 25c direct to National Information Committee on Lighting, Dept. CP, 1410 Terminal Tower, Cleveland 13, Ohio.

Camera need not be used to record a single oscillogram . . .

device traces repetitive pattern on paper

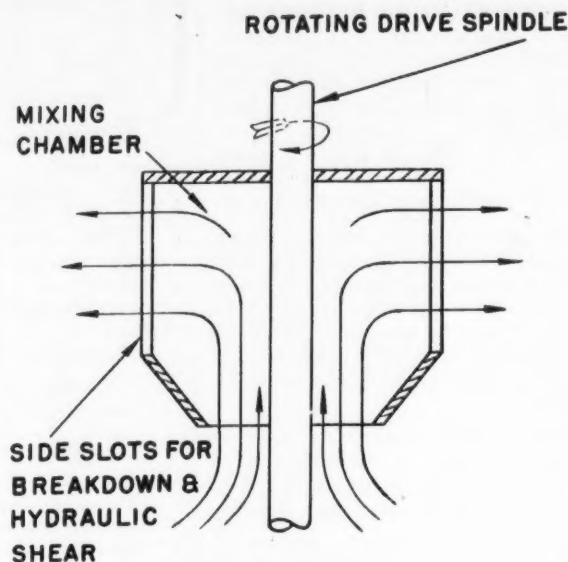
It has always been possible to make a photographic recording of cathode-ray oscillogram. However, the camera is not always available or the amount of effort to set it up seems too great to serve just for one oscillogram. A recently perfected device offers a simple means of tracing a repetitive pattern accurately on paper or directly in a note book.

The Oscillo-Tracer is an optical super-positioning device, using a double-coated lens. An arm carrying the lens is adjustable in length to fit any standard oscilloscope. In its proper position, arm will place lens at equal distance from oscilloscope and from base level of oscilloscope. Operator's eye above lens sees a reflection of the cathode-ray trace superimposed on the paper directly below the lens. A small lamp is provided in the base of the Oscillo-Tracer to illuminate the pencil while tracing the oscillogram.

In addition to tracing oscillograms, the device is used in 1) reading traces on graph paper scales, i. e., log, semi-log, decrement, etc., 2) increasing accuracy by eliminating parallax due to the use of curved face cathode-ray tubes and flat plastic

NEW DISCOVERY

Premier Simplex Dispersators

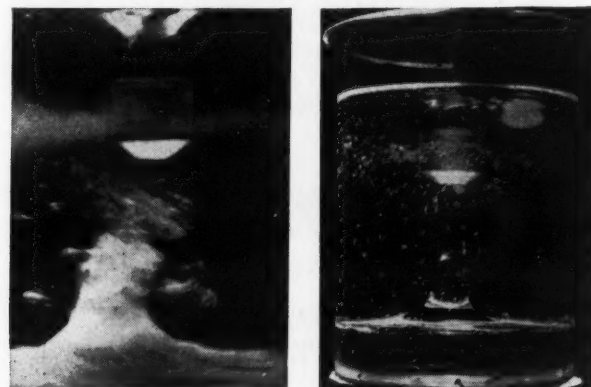


The SIMPLEX DISPERSATOR is a slotted cylinder rotating at high speed. The centrifugal force resulting from this high-speed rotation forces the products through the slots under considerable pressure. A double shearing effect is thus obtained. The product is sheared at high speed as it passes through the slots; the columns of liquid emerging from the slots are further sheared as they make contact with the relatively slower-moving mass of liquid outside the cylinder.

MIXES IN FRACTION OF TIME REQUIRED BY PROPELLERS

Suppose you want a liquid/solid reaction to produce a gelatinous product. Normally, each solid particle becomes coated with a gelatinous layer. Until this insulating layer is removed, the reaction cannot be completed. Propellers remove the layer very gradually. The SIMPLEX DISPERSATOR shears off the gelatinous insulation from the solid particles almost immediately, with little or no slowing down of reaction time. Thus a process which may take hours or days with a propeller mixer can be completed in minutes or even seconds with a SIMPLEX DISPERSATOR.

VISUAL PROOF



(Above) Shows DISPERSATOR running at comparatively low speed, sucking up a heavy organic liquid and producing a finely divided dispersion, which is shown being thrown off the sides of the DISPERSATOR itself.

(Right) The two liquids are ortho-nitro toluene and water. Speed of

DISPERSATOR is low to show its action. Suction column of O.N.T. is shown entering the bottom of the DISPERSATOR and leaving in a dispersed state. If DISPERSATOR reaches its proper speed (3,000-4,000 r.p.m.'s) all of the O.N.T. would be dispersed in the form of an emulsion within a few seconds.

PREMIER MILL CORPORATION
2181 GENESEE STREET • GENEVA, NEW YORK

IN MIXING *Amazing Speed Lower Cost*

Premier Duplex Dispersators

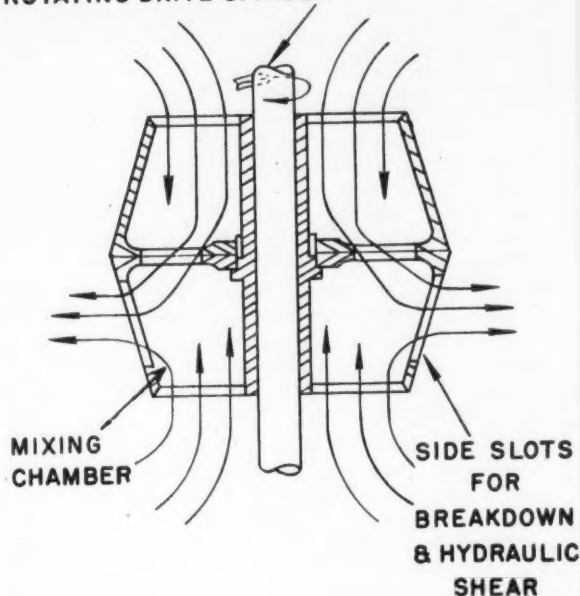
While the SIMPLEX DISPERSATOR is perfectly adequate for some uses, there are many processes where a more thorough and faster breakdown and wetting of materials is necessary. In these cases the DUPLEX DISPERSATOR is recommended.

Whereas the SIMPLEX DISPERSATOR has a single-flow direction, the DUPLEX DISPERSATOR permits *two-way* flow, by virtue of a double cone construction which forces liquids to enter the rotating cylinder from both top and bottom. This *two-way* flow forces intense mixing and wetting action in the lower cone before liquids escape through wall slots.

Thus the DUPLEX DISPERSATOR may be used effectively to mix or blend two liquids of different specific gravity. It is ideal for drawing heavy solids from the bottom and light materials from the surface to insure thorough wetting and dispersion.

The DUPLEX DISPERSATOR, due to its double-flow action, will mix fluids of greater viscosity than the single-cone SIMPLEX DISPERSATOR. This is an important function in the blending of color pastes and in promoting chemical reactions in mixtures which become highly viscous as the reaction is completed.

ROTATING DRIVE SPINDLE



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★ Laboratory or pilot plant
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★ shows the revolutionary
★ features of these Dispersa-
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★ on a small scale and at
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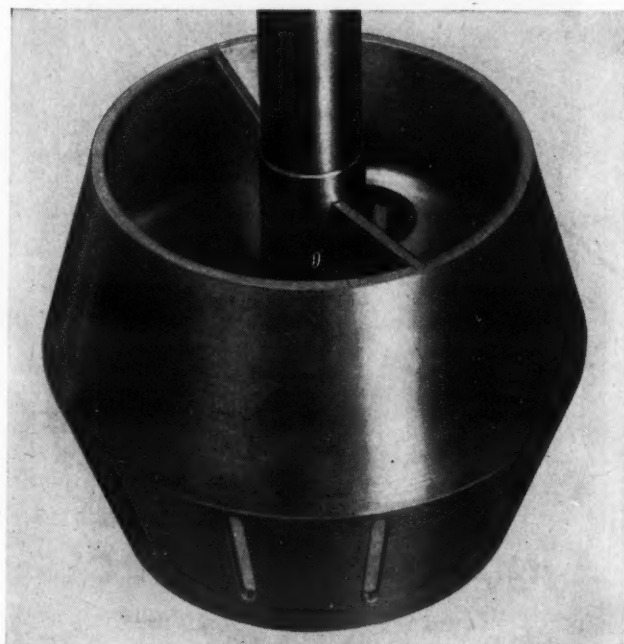
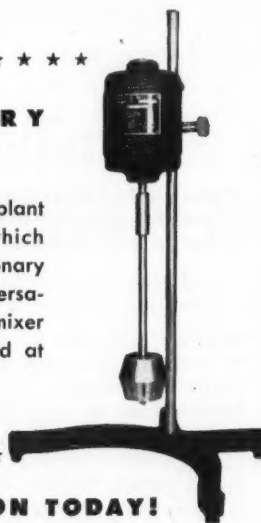
Send me full details of the SIMPLEX DISPERSATOR and the
DUPLEX DISPERSATOR.

Name

Firm

Street and Number

City State



ASK OUR ENGINEERS

If you have processes where mixing, dispersing, or reacting time is excessive, tell your problem to our engineers. If you give full details, our engineers can help you by recommending the right model and size DISPERSATOR to solve your problem.

Patents Applied For

IDEAS

scales, 3) comparing traces by superpositioned method, 4) detecting small, slow changes of patterns, 5) precise measurement of trace amplitudes and wave forms, 6) for accurate determination of production test results measured with oscilloscopes.

Standard arm adjusts to permit use with oscilloscopes having tube-center-to-table distances of 9 to 12". Lens is special, double-coated, high reflection upper surface, high transmission lower surface. Stable, cast base has internal lamp. Power is 115 volts, 6 watts. Lamp used is S-6 Mazda. Weight is 2½ lb.

(Oscillo-Tracer is a development of Robert A. Waters, Inc., Dept. CP, 4 Gordon St., Waltham, Mass. . . or for more information check CP 4980 handy form, pages 2 and 3.)

Competitive positions of textile fibers

Survey of textile fiber consumption for the past 56 years (1892-1948) provides a convenient and comprehensive reference source on the competitive position and relative importance of all textile fibers produced, processed, exported, imported, and consumed in the United States.

Data are presented from 2 viewpoints: 1) on the basis of quantities of raw fibers consumed or processed in domestic textile mills; and 2) on the basis of fibers used by ultimate consumers. Statistical Bulletin 89 is issued by Southern Regional Research Laboratory, 2100 Robert E. Lee Blvd., New Orleans 19, La.

Burlap and cotton bags may be short . . .

USDA offers pointers to aid in conserving supply

The conservation and maximum re-use of burlap and cotton bags, to help offset an expected tight supply situation, has been urged by the U. S. Department of Agriculture.

Following suggestions have been offered: 1) bags should be kept in use. If they are not needed, they should be returned immediately to dealers or given to other users. 2) Bags should be handled carefully.

(U. S. Department of Agriculture, Production and Marketing Administration, Washington, D. C.)

For more information on product at left, specify CP 4981 . . . see information request blank between pages 2-3.

get small tube cleaning
SITUATION
WELL IN
HAND with
Airetool



Handy is the word operators use to describe AIRETOOL condenser and heat exchanger tube cleaners. They are very light in weight, yet extremely powerful. All moving parts are made of heat treated alloy steel.

Special construction features include a convenient handle valve for positive operator control, a flushing device that permits brush or drill heads to run cool under all scale conditions and a powerful motor that can be taken apart and re-assembled on the job without special tools.

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For more details, write The AIRETOOL Mfg. Co., 331 S. Center Street, Springfield, Ohio.

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BRANCH OFFICES:

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There's an AIRETOOL Tube Cleaner and Tube Expander for every type of tubular construction.

IDEAS

Prevention of dermatoses in industry . . .

personal hygiene and use of a specially developed cream play important roles

Advances in the prevention of contact dermatoses (skin infections, eruptions, and disease caused by contact with various substances and materials) in industry by the use of a multi-purpose cream, and techniques for its use, are announced by the medical director of the Wright Aeronautical Corporation.

Primary irritants and sensitizers are said to be the two main causes for industrial dermatitis. Primary irritants tend to take the natural oils out of the skin and make it easily susceptible to infection by fungi and bacteria. Sensitizers are those substances which, after exposure, tend to cause an allergic skin reaction. Function of a protective cream is to form a coating which keeps the primary irritants and sensitizers off the skin.

Prevention of dermatoses is dependent on four factors: 1) careful plant housekeeping, 2) scrupulous attention to personal hygiene by workers, 3) proper selection and placement of workers who may be unusually sensitive to certain chemicals or other irritants, and 4) plant-wide use of effective protective media.

Because commercially available creams did not afford satisfactory protection, research and experiments were conducted in cooperation with chemists and chemical engineers to develop an effective cream. Result was an ointment of the vanishing cream type. This was packaged in individual tubes which workers could carry in their coveralls or shirt pockets, and thus have it constantly available.

After twelve months of carefully controlled experience at Wright, not a single case of industrial dermatitis developed on those employees who washed every two hours and applied the protective cream as directed.

(Information received from Wright Aeronautical Corporation, Dept. CP, Wood Ridge, N. J.)

Vermiculite insulation vital when shipping hot ingots to forge 200 miles away . . .

eliminating stresses and strains of cooling and reheating results in a better forged product

Recently, white hot ingots were transported from Sydney to Trenton, Nova Scotia, a distance of 200 miles. Shipments were made from open hearth department of Dominion Iron & Steel Company to forging department at Trenton. Previously, all ingots were allowed to cool at controlled rates at Sydney, shipped cold, and reheated at Trenton's forging department to a temperature of 2,300°F when the ingot would be ready for forging.

In using the new methods, the molten steel for ingots is poured from furnace at open hearth of the big Sydney plant into a mould and allowed to stand until the steel solidifies but remains white hot. Ingot is then stripped from its mould and lowered into a special insulated steel box, which is anchored to a flat car. Designed as an eight-sided figure to facilitate stripping, the big ingots stand 16 feet high and have a body 6½ feet in diameter; top is slightly smaller. Held in place by pre-moulded supports, remaining space in box is filled with loose vermiculite to keep the steel from cooling.

Method of insulation was devised by officials supervis-

MERCOID AUTOMATIC CONTROLS



THEY ARE USED FOR THE CONTROL OF TEMPERATURE, PRESSURE, LIQUID LEVEL AND MECHANICAL OPERATIONS. THE MERCURY SWITCH IS A FEATURE IN MERCOID CONTROLS THE REASON FOR THE MERCURY SWITCH IS THE ADDED SAFETY-BETTER PERFORMANCE AND LONGER CONTROL LIFE-ALL OF WHICH ARE IMPORTANT WHEREVER CONTROLS ARE REQUIRED WHY CONSIDER LESS WHEN YOU CAN GET SO MUCH MORE

WRITE FOR COMPLETE CATALOG

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When inquiring check CP 4983 on handy form, pgs. 2-3

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FLOATLESS CONTROL FIELD



Floatless

**LIQUID LEVEL and
INDUSTRIAL CONTROLS**

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FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 4984 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 4982 on handy form, pgs. 2-3

ing both operations in conjunction with the company's research department. It has been so successful that the temperature of the steel container is no more than the existing air temperature, despite the 1600°F temperature of its contents. Tapping temperature of the steel is usually set to be about 2850°F.

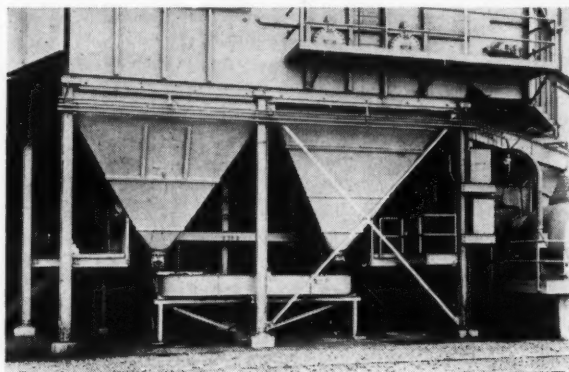
While extra freight cost offsets cost of reheating a cold ingot, setting up of stresses and strains inside the steel while cooling and reheating is eliminated. Thus a higher quality of forged product is obtained. Because of the advantages offered, the practice will be retained.

The Trenton works makes shafting and other components for Canada's shipbuilders, special shafting for giant turbines, complete hoists, and many other lines of heavy equipment. (Vermiculite is a product of Zonolite Company, Dept. CP, 135 South La Salle St., Chicago, Ill.)

Fly ash in storage hoppers kept dry, free flowing by mineral wool jackets . . .

installation at utility generating plant prevents ash from becoming wet, sticky

Hot fly ash from furnaces servicing boilers at Sewaren generating station of Public Service Electric & Gas Company of New Jersey is stored in hoppers and periodically emptied onto conveyors, dumped into trucks, and sold for fill, cinder blocks and similar uses. Since fly ash is discharged at temperatures of approximately 284°F, low outdoor temperatures would cool it and produce condensation unless hoppers are insulated. Wet fly



Insulation prevents condensation on hoppers

ash is heavier, more difficult to handle than when dry and often sticks in hopper. Slow removal of the ash and extra maintenance are avoided by the right type of insulation properly applied.

In the illustration, the two precipitator hoppers servicing the No. 1 boiler are covered with 1½" thick mineral wool blocks in 12 x 18" sections. Externally applied, the insulating blocks were placed between lugs which were welded to the sheet-metal surfaces on 12" centers. To secure the insulation, galvanized iron wires were tightly stretched over the blocks and bound to the lugs. A layer of insulating cement, ¼" thick when dry, was troweled over the blocks and that was followed by application of ¼" thickness of weatherproof finishing cement. Two coats of oil paint were next and final step.

(Summarized from installation report of Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y.)

no ONE chain serves every purpose



This Link-Belt universal crescent flat top chain travels around vertical curves, as well as the sharp horizontal bends shown here, in the Cranford, New Jersey plant of Johnson & Johnson. Jars of Baby Cream take this irregular path so that they cool properly before being capped, each always riding separately on its own chain top plate.

LINK-BELT offers the RIGHT chain for every job . . . engineered to meet your requirements

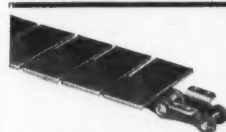
Typical conveyor chains from the complete Link-Belt line



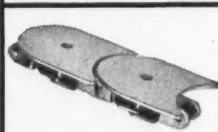
S-815 flat top conveyor chain—economical, sturdy, reliable, easy to detach and to keep clean.



Class 400 swivel chain—carries cartons, cases, etc. over paths with both vertical and horizontal turns.



Class RC flat top chain—precision made for smoothest, spill-free carrying and long life.



Class RC crescent flat top chain—travels in horizontal planes, around corners; ideal for bottles and cans.

Link-Belt offers no single "cure-all" chain to handle every job. From the most complete line of chains and sprockets in the world—we can recommend the *exact* type to fit your particular job requirements—cast, combination, forged and fabricated steel, roller or silent for conveying and power transmission service. So, whatever your chain problems, big or small, Link-Belt engineers will work with you or your consultants to help solve them.

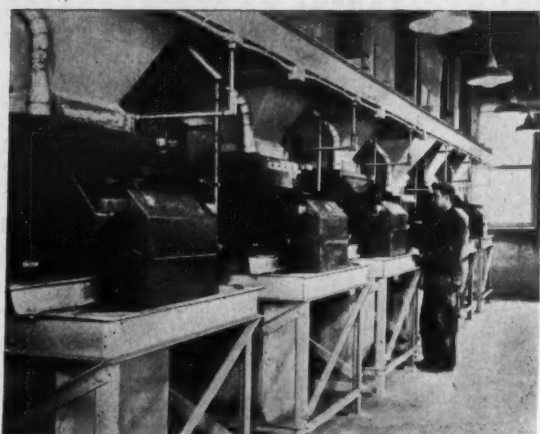
LINK-BELT COMPANY, Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.

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LINK-BELT

CHAINS AND SPROCKETS

When inquiring check CP 4985 on handy form, pgs. 2-3



RICHARDSON AUTOMATIC SCALES

WORK FOR



A high hourly volume of flour—accurately blended to meet the exacting requirements of National Biscuit Company's huge baking operations—those were the specifications, and Richardson supplied the foundation for success—perfectly blended wheat. A battery of Richardson Automatic Scales accurately keep pace with the speed and volume of Nabisco's tremendous operation.

Perhaps you have a blending or weighing operation. Are results as accurate and efficient as you would like? Why not call on the backlog of experience of a Richardson engineer. At some time in Richardson's 50 years' experience in materials—handling-by-weight, a problem similar to yours has been met—and effectively solved. A survey of your weighing or blending problem places you under no obligation.

PROBLEM:

To obtain the greatest possible consistency and accuracy in blending wheat on a high tonnage basis.

SOLUTION:

Installation of a battery of Richardson Automatic Scales—accurate to 1/10 of 1% of all material weighed. Accurate blending of wheat by weight was accomplished for the largest soft wheat milling operation in this country.

For information on Richardson Automatic Weighing Equipment, ask for Bulletin No. 0450. For information on Richardson Proportioning, Blending, and Process Control Equipment, ask for Bulletin No. 0550.

Richardson Scale Co., Clifton, New Jersey. Feeder-Weigher Systems of All Types: Automatic Bulk Weighing Hopper Scales, Including Conveyor-Feed Types—Continuous Feeder-Weighers—Automatic Bagging Scales—Bag-Sewing Conveyors—Packers—Process Control Panels. Branch offices in: Atlanta Boston • Detroit • Minneapolis • Cincinnati Wichita • Montreal • Omaha • New York • Pittsburgh San Francisco • Toronto • Buffalo • Chicago Philadelphia • & Houston.

Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

7631

When inquiring check CP 4986 on handy form, pgs. 2-3

IDEAS

Here's one silicone resin that's suitable for coating uses . . .

incorporated with alkyd resin and applied to stucco, moisture is inhibited and surface checking stopped

To date, only a tiny fraction of an infinite number of molecular combinations which will produce silicone resins for coating applications have been investigated. Among these is G-E 81182 silicone resin, notable for its wide range of compatibility with a number of paint resins. Coatings formulated with it exhibit increased resistance to gasoline, oil, grease, stains, heat, and moisture.

In combination with alkyd resins, this silicone resin indicates some interesting moisture resistant possibilities. Test panels made from a commercial ready-mix finishing stucco were sprayed with a 5% solution consisting of 20 parts G-E 81182 silicone resin and 80 parts Glyptal alkyd resin. After aging for 2 weeks, the panels were immersed in water and weighed daily. The control panel absorbed water to a constant weight in 8 hours. At the end of 7 days, the rate of water absorption of the silicone alkyd panels dropped sharply, and at the end of 14 days, the samples had absorbed only 5/6 of the water absorbed by the control.

Stucco panels treated with the silicone alkyd resin combination, either as a primer under cement paint, or as a clear finish coat, also retards the formation of surface checking. Test panels subjected to 2 months of summer sun and weather using this formulation showed no sign of checking, while controls were badly checked.

Silicone anti-foam agents are being used to reduce foaming in varnish kettles; silicone anti-flooding agents are finding extensive application for reducing or eliminating orange peel, 'silking', and pigment flooding.

(Product of the General Electric Company, Dept. CP, Pittsfield, Mass. . . . or for more information check CP 4987 on handy form, pages 2 and 3.)

Controls built into machines are practical way to keep voltage constant . . .

no areas immune from difficulty, but variations can be controlled within plus-minus 1%

Voltage variations are commonly encountered in industrial plants. Investigations of an electrical apparatus manufacturer show that the trouble usually is within the building, which often is not adequately wired for the electrical burden it must carry.

Power circuits cannot be depended upon to maintain constant voltage at all times. No area is exempt from difficulty. Fluctuations of as much as 30% are not rare. Excessive high or low voltage causes specific problems in all types of industry.

Proper rewiring of many buildings would take care of added loads imposed by communication and public address systems, electric welders, battery chargers, conveyors, electric typewriters, and various types of apparatus. However, the manufacturer conducting the research discussed here advances the idea that the perfect place to discipline electricity is within the machines themselves. For instance, it is apparent that an X-ray machine must have stable voltage. A constant voltage transformer within the machine eliminates the difficulty. This applies to many industrial machines and devices. Voltage can be controlled very closely. Line voltage

AT YOUR FINGER TIPS

COLOR CODES for Pyrometer Wires

CALIBRATION SYMBOLS FOR THERMOCOUPLE									
SYMBOL	TYPE	TEMP.	RES.	TYPE	TEMP.	RES.	TYPE	TEMP.	RES.
EXTENSION	B	100	100	EXTENSION	B	100	EXTENSION	B	100
EXTENSION	B	100	100	EXTENSION	B	100	EXTENSION	B	100
EXTENSION	B	100	100	EXTENSION	B	100	EXTENSION	B	100
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EXTENSION	B	100	100	EXTENSION	B	100	EXTENSION	B	100

Now, on one handy chart (8 1/2" x 5 1/2") Color Codes, Calibration Symbols, Thermo Elements of Thermocouple and Extension Wires for ISA, U.S. Military and Aeronautical Specifications — Plus — Resistance Tables.

Write Today for your copy. No obligation, of course.

Thermo Electric Co., Inc.
FAIR LAWN, NEW JERSEY

When inquiring check CP 4988 on handy form, pgs. 2-3

So Simple
to maintain a
BARTON FLOWMETER

—major sources of trouble inherent in other differential-pressure meters are eliminated.

NO LIQUID SEALS TO LOSE—corrosive and volatile liquids are handled by stainless steel bellows and range spring assembly, without seal pots. This lowers installation and upkeep costs.

NO MERCURY USED—hence, no losses by over-ranging, leakage, theft or emulsification. Meter is less bulky. Accurate leveling isn't needed.

UNSKILLED PERSONNEL can put a Barton into operation—because over-ranging won't damage the meter.

CLEANING ISN'T NEEDED—a Barton drains or vents itself. No pockets to trap condensates. No floats, chains, etc. to corrode. Assures accurate readings.

for measuring
FLOW • LIQUID LEVEL • DIFFERENTIAL PRESSURE

Write for details in Bulletin 11C4

BARTON
INSTRUMENT CORPORATION

1437 SO. EASTERN AVENUE, LOS ANGELES 22, CALIFORNIA

When inquiring check CP 4989 on handy form, pgs. 2-3

IDEAS

may vary between 95 to 130 volts but be controlled within plus or minus 1% at the desired level.

(Summarized from report of survey by Sola Electric Co., Dept. CP, 4627 West 16th St., Cicero, Ill.)

Doubles storage capacity with 6% increase in storage area plus efficient handling

With a mere 6% increase over their customary storage space Westinghouse Electric Corporation is able to double the volume of stored lamps since they opened their new warehouse at Trenton, N. J. It had been the former custom elsewhere to store 22.5-million lamps in 260,000 square feet of area, actually divided between 6 different sites, by manual handling. Now, 45-million lamps are being stored in a single locality of 275,000 square feet area at the new warehouse.

Increasing space was not entirely responsible for this improvement. Westinghouse employs electric handling



One of a fleet of fork trucks at Westinghouse that is stacking lamp bulbs to heights of 158" for efficient use of storage space

equipment — fork trucks and conveyors. Maximum tiering was manually impossible; now, however, mechanized tiering is possible to heights of 144", and even 158" in some cases. The handling operations follow this pattern:

Cartons of lamps go from the packing area in the factory to the warehouse on belt conveyors via a bridge between buildings. From conveyor belts they pass in-

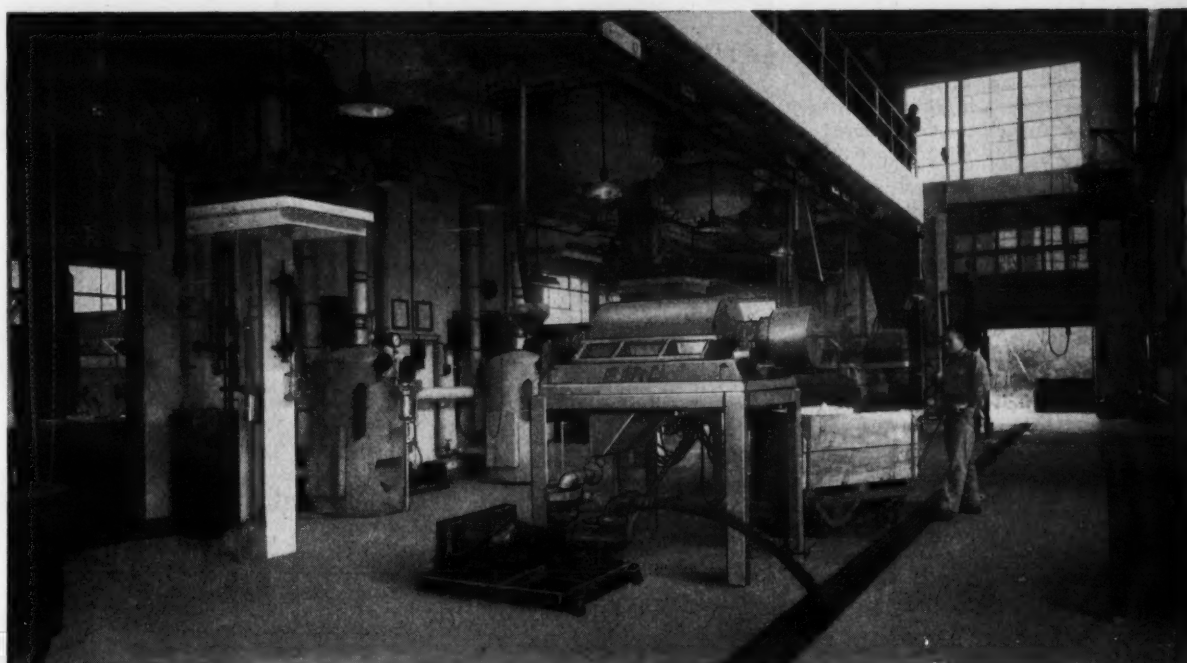
to a "corkscrew" chute that slides them to a lower level. Another conveyor takes cartons to the sorting room where they are palletized on 48 by 48" pallets and readied for transfer to storage. Palletizing is the last manual operation.

This completed, a fleet of nine electric "Skylift" fork trucks (one is 1-ton capacity, other eight are 1/2-ton capacity) take over. Of the actual 275,000 square feet of area in the warehouse, 200,000 square feet are allotted to storage of 4,400 different classifications of lamps.

Order filling prior to shipping is complex because many orders are less than carload and contains a large variety of classifications. Here, trucks enroute from storage to loading docks halt while a checker compares loads with invoices before they proceed to waiting cars.

Each day, 16 carloads (some 2-million lamps) are shipped from the warehouse, with an equal number transferred between factory and warehouse. Although the handling job is a big one, the personnel performing it is small. This force includes 47 warehouse employees with 25 office people. Westinghouse reports a vast improvement in handling efficiency over its former custom, with resulting appreciable economies. (Skylift trucks are made by Automatic Transportation Company, 149 West 87th St., Chicago, Ill.)

NEED HELP ON SOLIDS-LIQUIDS SEPARATIONS *for* EXPANDING PRODUCTION? HERE IT IS!



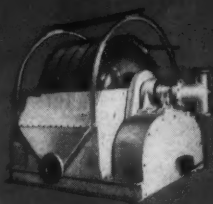
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The BIRD Continuous Solid Bowl Centrifugal Filter



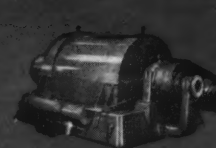
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When inquiring check CP 4990 on handy form, pgs. 2-3

IDEAS

Blending process gives improved BHC-DDT insect dust . . .

all diluent particles carry some active ingredients

Pennsylvania Salt's new process for blending DDT-BHC insecticide formulations is being made available to outside formulators. Advantage of process is reported to be that virtually every particle of diluent carries some of the active ingredients, in contrast with mechanical mixtures where some particles remain inactive.

A quantity of 36% gamma isomer of BHC is first melted in vessel equipped with steam coil or jacket. Then, the DDT is added and melted in with mild stirring. The molten mix, containing about 62½% BHC and 37½% DDT, has a lower melting or setting point than either of the two ingredients alone. It remains liquid for about 72 hours at room temperature.

An absorptive carrier is impregnated by spraying with the melt to make a 9% gamma BHC—15% DDT concentrate. This concentrate is then usually blended with twice its own weight of non-absorbent extender for a 3-5-0 (3% gamma BHC, 5% DDT, balance diluent) or 3-5-40 (same as 3-5-0 with 40% sulfur) insecticide dust.

These combinations have been found to be very effective in controlling both the boll weevil and boll worm. With sulfur added, they control the red spider also.

(Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pennsylvania)

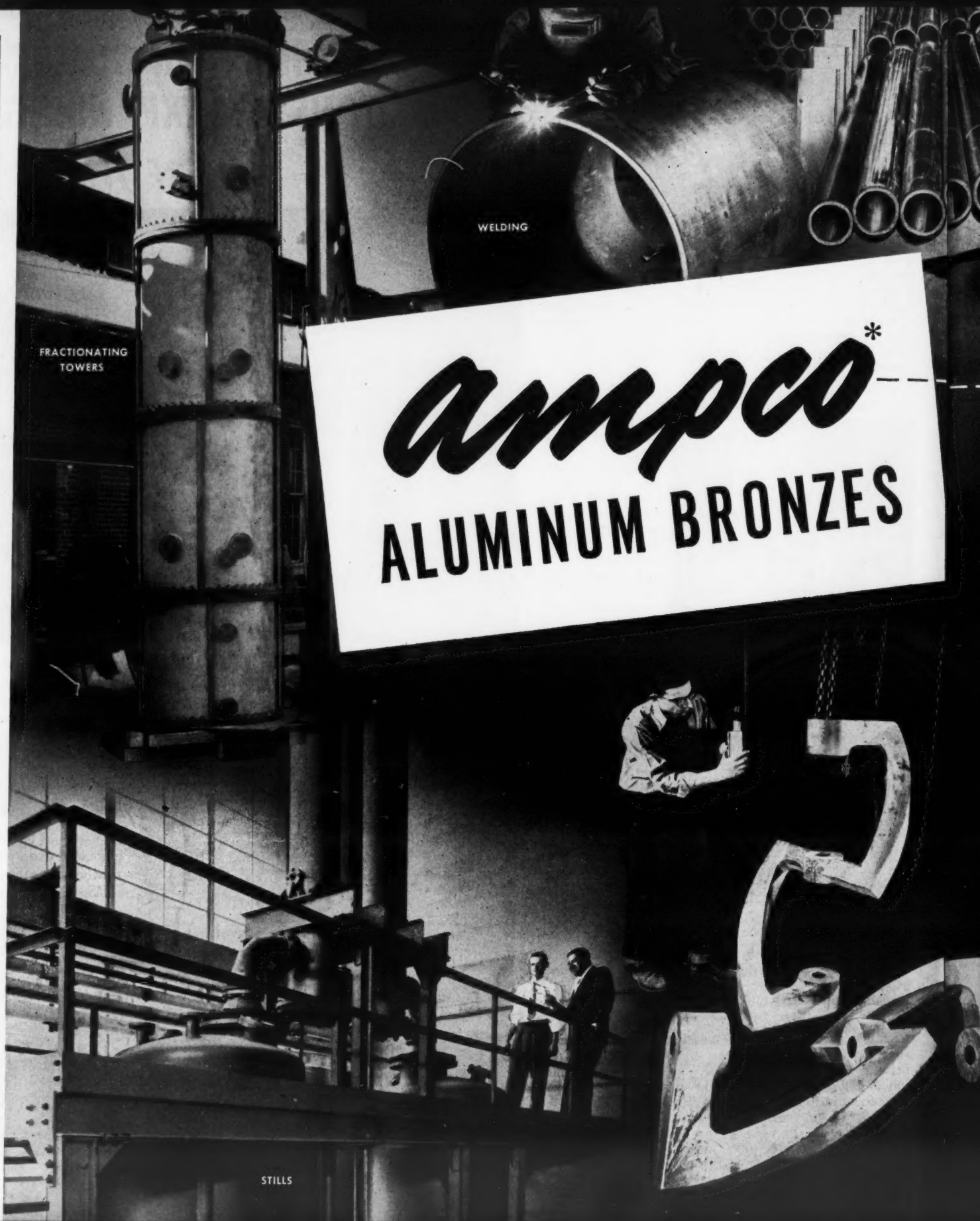
Coating doesn't burn at 1300°F . . .

fire-resistant paint made from titanium compound

Experiments are continuing on a fire-resistant paint containing titanium that failed to burn during a test in which panels coated with it were brought to a dull red heat of about 1300° F. In other tests, coatings did not burn when held at 650° F for an hour. However, it is still necessary to find some means of obtaining satisfactory adherence to metal and resistance to salt-water attack.

First step in making the paint is the reaction of titanium tetra-chloride with isopropyl alcohol. Tetra-isopropyl titanate thus formed is then formulated with aluminum flake.

When paint is applied, the titanate



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ALUMINUM BRONZES

PIPE

an answer to corrosion problems!

Boiler Code Approval

Ampco Metal Grade 8 is an annealed alpha aluminum-bronze alloy conforming to ASTM B-169-50T Alloy D. It is approved for use in the construction of unfired pressure vessels. See your Boiler Code Handbook — paragraphs U-68 and U-69 as interpreted in case No. 1108 — for complete details.

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* Reg. U. S. Pat. Off.

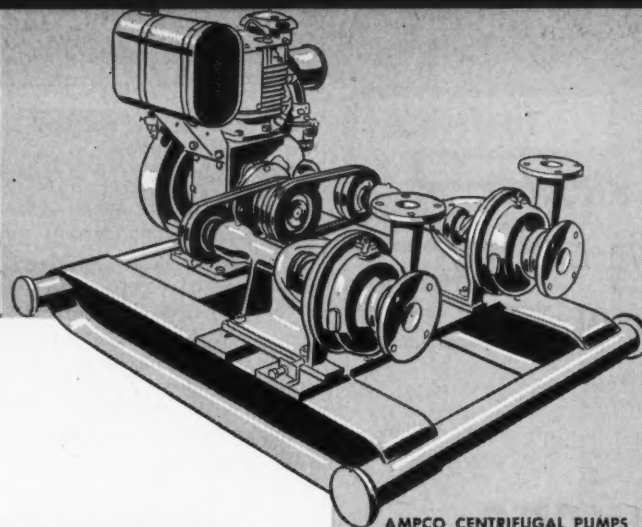
Ampco Metal, Inc.

Milwaukee 46, Wisconsin

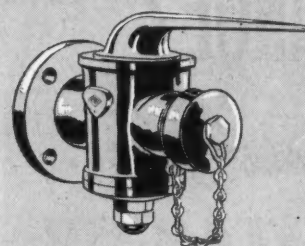
West Coast Plant
Burbank, California

AMPco

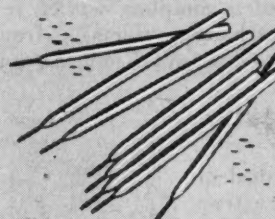
AGITATORS



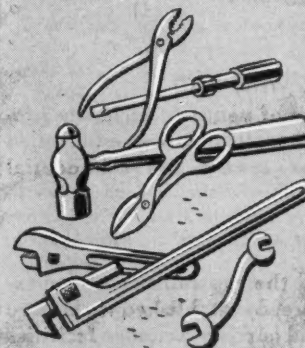
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AMPco SAFETY TOOLS

AMPco METAL, INC., Dept. CP6, Milwaukee 46, Wis.

Send me information on the application of Ampco Aluminum Bronzes for corrosion-resistant service in the Process Industries.

Name.....Title.....

Company.....

Company Address.....

City.....State.....

IDEAS

reacts with moisture in the air to form titanium oxide and propyl alcohol. The latter evaporates, leaving a film of titanium oxide and aluminum. (E. I. du Pont de Nemours and Company (Inc.), Dept. CP, Wilmington 98, Del. . . . or for more information check CP 4991 on handy form, pages 2 and 3.

Cooling tower builders form group to improve techniques, standards . . .

will also encourage government, private water saving efforts

Intensified efforts, both government and private, toward conservation of water will have support and cooperation from the newly formed Cooling Tower Institute. Raymond C. Kelly, president, states the organization's objectives to be: support of cooperative research toward improving technology, design and performance of industrial water cooling equipment; coordination of recognized engineering groups in developing standardized testing procedures acceptable to manufacturers and users of industrial water cooling equipment; establish minimum standards of construction; and accumulate technical data.

The cooling tower industry has grown more than ten-fold in twenty years. Present membership of the Institute represents a major portion of the manufacturing capacity for industrial type equipment. Eventually, it is hoped to encompass the entire field of both evaporative water cooling and newly developed air cooled heat exchangers.

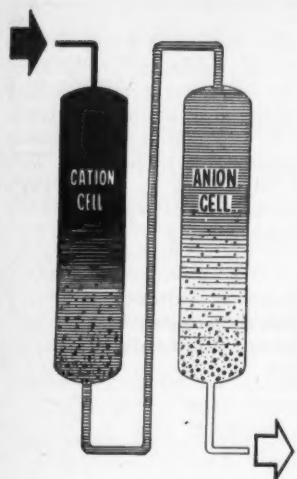
(Cooling Tower Institute, Dept. CP, Room 302, La Salle Bldg., 8 East Ninth St., Kansas City 6, Mo.)

Revisions extend book on adsorption

Revised second edition of 634-page book covers the general topic of adsorption. Specifications, detailed test procedures, etc., have been completely rewritten and rearranged with the cooperation of standardizing agencies and the producers and users of adsorbent materials.

Over 130 tables and 263 illustrations are included. To obtain "Adsorption", remit \$9 direct to McGraw-Hill Book Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y.

For more information on product at left, specify CP 4992 . . . see information request blank between pages 2-3.



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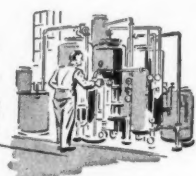


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If you are currently exploring the possibilities of ion-exchange for new processes or those already established we believe you will find our service helpful. And our ion-exchange facilities are backed by solid chemical engineering knowledge.

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When inquiring check CP 4993 on handy form, pgs. 2-3

IDEAS

New calibration method for testing sieves cited by NBS...

expected to reduce discrepancies in sieve analyses made at different labs with varied sieving apparatus

A simple, rapid procedure for determination of the effective opening size of testing sieves has been developed by NBS. The method, which employs calibrated glass spheres of graduated size, may be readily applied by anyone familiar with sieving procedures, without the need of special apparatus. Use of this technique is expected to reduce markedly the discrepancies which now occur between sieve analyses made at different laboratories with different sieving equipment.

Evaluation of the effective opening of a sieve with glass spheres is easily accomplished by sieving a calibrated sample of the spheres in exactly the same manner as employed for usual sieve analysis. The sample contains a continuous distribution of sphere sizes. The weight percentage passing the sieve is evaluated, and the effective opening of the sieve can then be read directly from calibration curve supplied with the sample. Once the effective size of each of a set of sieves is known, all sieve analyses made with the set can be corrected by a simple graphical process to give the same values as a set of standard sieves.

Cement, paint, abrasive, sugar, and other industries should be benefited. (A limited number of the calibrated glass sphere mixtures are available from J. M. Brown, Secretary, Bone Char Research Project, Inc., c/o Revere Sugar Refinery, 333 Medford St., Charlestown 29, Mass. Purchasers are requested to report their experience in the use of these spheres to Dr. V. R. Deitz, National Bureau of Standards.)

Recirculated fresh water for spray-cooling reformed gas is cooled by sea water...

limited supply of fresh water in closed system loses heat to salt-water spray in cast iron coolers

The new Long Island Lighting Company plant at Glenwood Landing on the north shore of Long Island employs a unique method of cooling water that cools and cleanses reformed natural gas. The plant cannot use the available unlimited supply of sea water for direct cooling because this would result in serious corrosion. The salt-free water supply that is used directly is so limited that it must be recirculated, calling for cooling during recirculation.

Natural gas from the Southwest is reformed into a gas closely approximating that produced by the company's several water gas plants in the area. Catalytic cracking is conducted in a process utilizing three furnaces developed by Surface Combustion Company. Plant capacity is about 35,000,000 cu ft natural gas per day. Reformed gas passes through a closed tower for wet scrubbing and cooling with the sprays of recirculated water.

While salt water cannot be used for spraying in contact with the gas, it can and is used for cooling the fresh water that is recirculated. The equipment used for cooling the recirculated water consists of built-up batteries of cast iron cooling sections over which salt water from Hempstead Harbor is sprayed. These cooling sections have high resistance to salt water corrosion and have proven economical, particularly when there are large quantities of process solution.

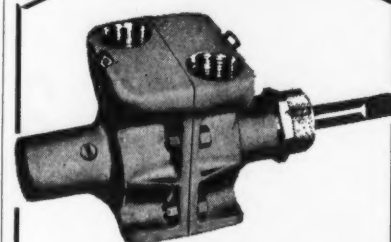
Coolers are placed close together and are surrounded by Transite walls. These walls perform two services: 1)

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STAINLESS STEEL MULTI-PURPOSE

The simple design and rugged construction of Eco Stainless Steel Pumps, with their high resistance to corrosion, combine to provide longer pump life at a lowest cost per gallon of liquids moved. Handles fluids in viscosities up to 4,000 Say. Vis., Magmas and non-lubricating viscous materials such as Polyvinyl Acetates, etc. Especially recommended for conveyance of emulsions, since pump motion does not exert shearing effect caused by other pumps—hence stability and uniformity of emulsion is maintained over wide PH range (aqueous dispersions of synthetic resinous polymers). Suitable for homogenizing; for lactic and viscous adhesive polymers.

CAPACITY: 2 to 15 gpm depending on viscosity

3 SIZES: 3/8" to 3/4"

PUMP HOUSING: Fully machined, 316 Stainless Steel. Also available in Naval Bronze

BEARINGS: Self-Lubricating Graphite
IMPELLERS: Synthetic Rubber or Mica

Available with Motor Unit, and Ball Bearing Pulley for Belt Drive.

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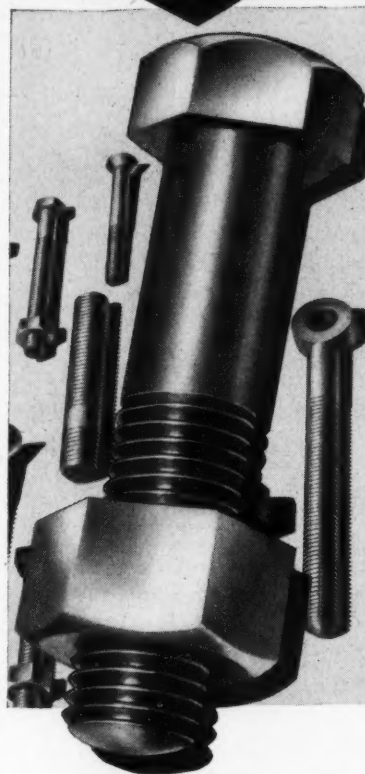
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ENGINEERED SMALL CAPACITY
POSITIVE DISPLACEMENT PUMPS

When inquiring check CP 4994 on handy form, pgs. 2-3

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IDEAS



Cast iron cooling sections surrounded by Transite board

they hold evaporative cooling to a minimum, thereby minimizing salt incrustation, and 2) they prevent salt mist from being blown to other equipment not so resistant.

Cooler installation is arranged in three parallel banks, each serving scrubbers for one of the three cracking furnaces. The three banks are interconnected for maximum operating flexibility. Each bank has 418 sections. The combined cooler with 1254 sections was designed to cool 1800 gpm of scrubbing liquor from 140 to 95°F when supplied with 2325 gpm of sea water at 70°F.

Jacket water for gas compressors and engines is cooled in a similar manner — by circulating it through closed systems and cooling with once-through sea water.

(Cooling sections are made by The National Radiator Company, Heat Transfer Division, Dept. CP, Johnstown, Pa. . . . or for more information check CP 4996 on handy form, pages 2 and 3.)

High strength soldering fluxes leave no corrosives in joining commonly used metals . . .

effective in fabricating heat exchanger units, etc.

Fluxes made from hydrazine are employed in a chemical-metallurgical method of soldering. Its rapidly expanding use in manufacture of heat exchanger equipment is typical of numerous applications. These fluxes are suitable for joining commonly used metals and produce solder bonds of highest strength, leave no corrosive residue and eliminate corrosion on plant equipment.

When used in producing automotive radiators, the substantial reduction in corrosion losses and increased strength are characteristic of performance in other applications.

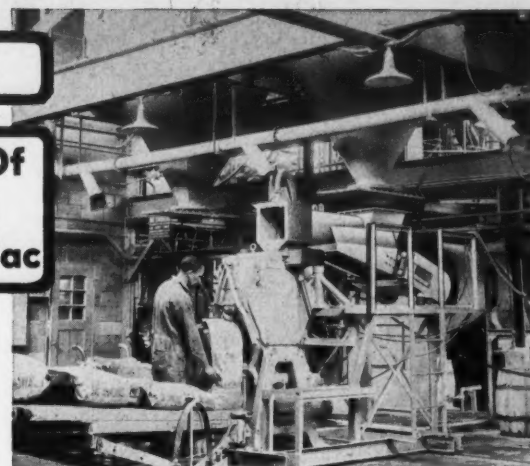
Hydrazine, which has many uses, fueled German rockets in World War II. Since then, it has found commercial application in pharmaceutical, agricultural, metal finishing and synthetic fiber fields.

The fluxes used in the "Cornil Soldering Process" were discovered by McCord Corporation and developed cooperatively with Mathieson Chemical Corporation.

One of the McCord radiator plants is now using the process and it is soon to be used in other plants of this organization. It is also finding applications in the electronic and other industries.

(MCC fluxes are available through Mathieson Chemical Corporation, Dept. CP, Baltimore 3, Maryland.)

Efficient Feeding Of Sal Ammoniac



SYNTRON

"Vibra-Flow"

VIBRATORY FEEDERS

The Syntron "Vibra-Flow" Feeder shown above, equipped with a tubular trough provides a smooth, even and controllable flow of Sal Ammoniac to a sack filling machine.

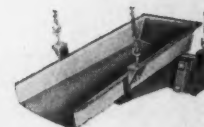


Other Models —

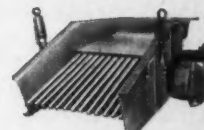
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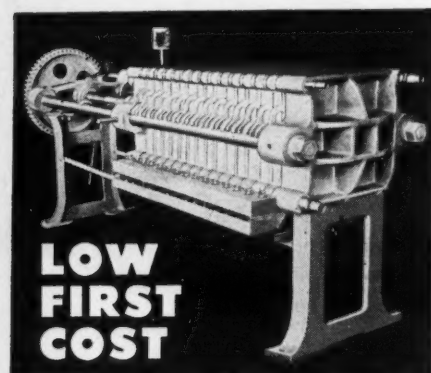
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Sperry Plate Filter Presses offer substantial economies all along the line. Labor cost is low. Economy in floor space and head room. Low depreciation. And this type of filtration equipment handles the widest possible range of applications at maximum efficiency. Plate filter presses—the Sperry type—are the most widely used filters in industry today. Check your own filtration problem with Sperry. Send samples of your material for a test run and estimate. No obligation.

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FILTER PRESSES

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IDEAS

Automatic sampling, metering of waste waters essential to efficient treatment . . .

here are 5 systems for intermittent or continuous sampling of streams under pressure, in open channel

Water shortages in certain localities in the last few years, prospective materials shortages, and the enactment of 'clean stream' laws have made industry conscious of the need for consistent sampling of waste waters and measurement of their flow. With such information available, it is often possible to treat waste water for re-use in the plant or so it will be acceptable for admission to streams or municipal sewers. In certain cases, study of waste waters has permitted recovery or conservation of valuable raw materials which otherwise might have 'gone down the drain'.

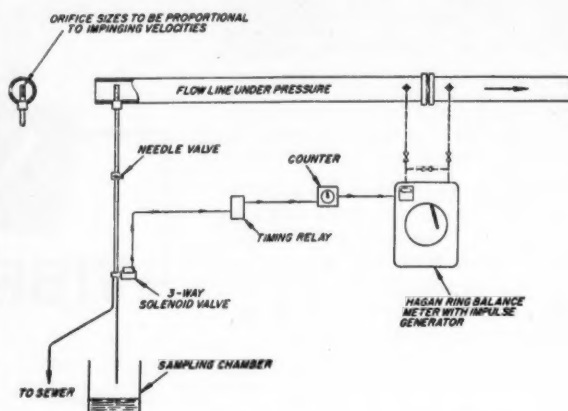


Fig. 1—Intermittent sampling from a line flowing under pressure

Although many improvised sampling systems have been successful, the present demand appears to be for completely automatic systems. Five such systems are outlined here which afford a choice between intermittent and continuous sampling from lines where flow is under pressure or in open channels. In each case a "Ring Balance Meter" (Hagan Corporation) is used to indicate, integrate, and record flow, as well as to actuate a sampling mechanism.

Intermittent sampling systems make use of the Ring Balance Meter to measure the flow either in a pipeline or channel. Here, the meter is equipped with a device which generates electrical impulses proportional to flow, the impulses are in turn fed into a counter which totalizes these to some predetermined value, and finally the counter energizes a timing relay.

1) For intermittent sampling from a line flowing under pressure (see Fig. 1), the timing relay opens a solenoid valve (positioned for "flush" or "sample") in the sampling line from the main flow line for a given time for flushing and then admits the required sample to the sampling chamber. System then shuts down until another set quantity of fluid passes, and the cycle is repeated.

2) For intermittent sampling from an open channel, the arrangement is similar. A pump is used instead of the solenoid valve. Primary element at the meter employs a single dip tube and bubbler system in place of the orifice in the line under pressure.

Continuous sampling systems also make use of the Ring Balance Meter.

3) For continuous sampling from a line flowing under pressure, the meter is used with a transmitter producing a

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"Makes the roof perspire for you"



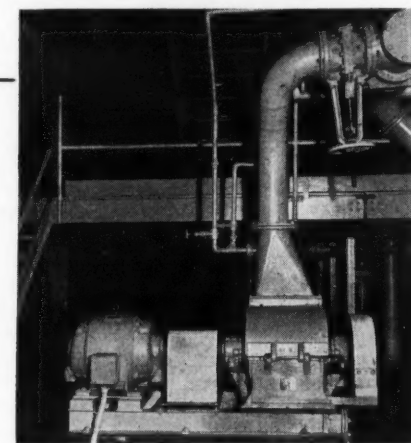
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Gruendler Laboratories, 1911 N. Market St.

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pneumatic signal that is linear with flow. The signal positions a diaphragm control valve, admitting a sample that is proportional to flow to a sample container.

4) Continuous sampling from an open channel (see Fig. 2)

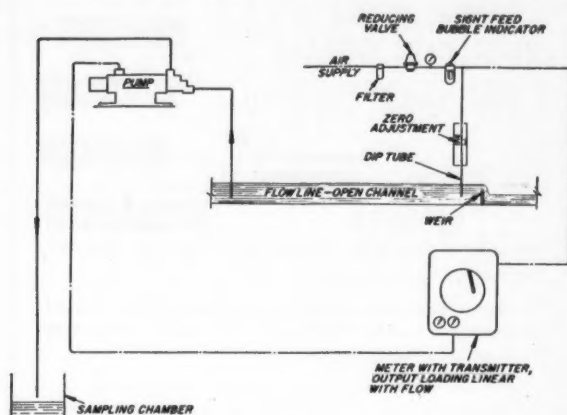


Fig. 2—Continuous sampling from an open channel

can be achieved with the meter and transmitter. Here, the pneumatic signal, operating through a pneumatic controller, adjusts the output of a pump which in turn delivers a sample proportional to flow. Dip tube and bubbler system are similar to one previously mentioned.

5) An adaption of the latter system makes use of an electric control for governing the operation of the sampling pump.

(Information concerning sampling and gauging methods are detailed in "Gaging and Sampling Water-Borne Wastes", by Charles F. Hauck, in the ASTM Bulletin of Dec., 1949, reprints of which are available from the maker of Ring Balance Meter, Hagan Corporation, Dept. CP, Hagan Building, Pittsburgh 22, Pa. . . or for more information check CP 5002 on handy form, pages 2 and 3.

Radiation film dosimeter lends self to quantify production . . .

rugged and inexpensive badge is for intensities of 0.5 to 10,000 roentgens

The National Bureau of Standards has recently announced development of a film badge designed as an industrial casualty and civilian defense monitor for X and gamma radiations of intensities from 0.5 to 10,000 roentgens. Although somewhat less accurate than other types of radiation meters, the badge is rugged and inexpensive, readily lending itself to large quantity production.

Badge consists of a Bakelite film container, a lead absorber, a tin absorber and a suitable photographic film. The absorbers act as a filter for low-energy radiation. This radiation, if not filtered, would show on the film 10 or more times as heavily as the high-energy radiation, but is usually no more harmful to man.

Badges have been calibrated with X-radiation energies from 115 kev to 10 mev. Accuracy limits within ranges of 1 to 50 roentgens and 500 to 10,000 roentgens are $\pm 12\%$. In the center range, 50 to 500 roentgens, the resulting limits are $\pm 20\%$.

(National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.)

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Wilson's wide-range line of precision-made Wilson-Dudgeon Tube Expanders is backed by 97 years of experience in this specialized field. That is why the Wilson Engineering Staff can tackle unusual tube expander problems . . . and solve them quickly.

HERE ARE A FEW EXAMPLES:



Wilson-Dudgeon
Model 38 Tube
Expander



Wilson-Dudgeon
Model 41 Tube
Expander

- A manufacturer of beverage coolers had to expand a 1/4" OD tube into a 2" square header. The total length of the expander, including the mandrel, could not exceed 1 1/4". Wilson-Dudgeon Tube Expanders were supplied for this difficult application.

- A heat exchanger manufacturer had to join two pieces of tubing of the same diameter together without the use of a coupling. A Wilson-Dudgeon belling and flaring expander made this possible. This expander bells out one end of the tubing so that the other piece can be sweated into it.

- An Eastern manufacturer had to expand a 10" diameter blind cap 1 1/4" deep into a header. A conventional expander could not be used because the mandrel could not project through the blind header. A special Wilson-Dudgeon Expander was engineered to do this job very simply and rapidly.

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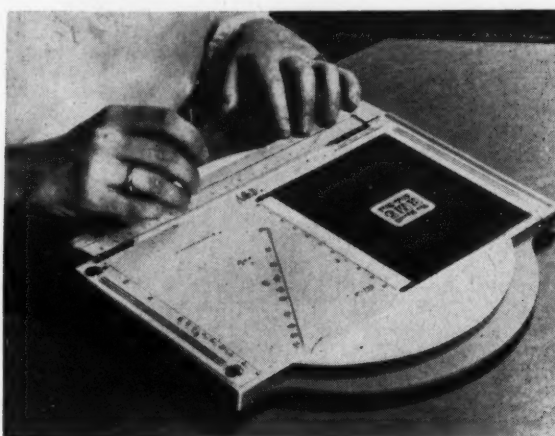
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Critical parts of device are made of Vinylite plastic rigid sheet; durable, easy to clean

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Hydraulic Drives . . . (Continued from page 53)

vertically and relieve undue stress on the carbon sealing ring.

Oil from the central pumping unit is used to lubricate the bearings of the sealing unit and to keep the sealing assembly tight. A pressure-reducing valve is placed in the line that leads from the oil line, which is under a pressure of 600 psi, to the bottom of the sealing unit. The pressure in the input line is maintained approximately 75 psi higher than the pressure which will be developed in the reactor.

The oil leaving the top of the sealing unit passes through a rotameter and then to a common manifold for receiving the oil returned from the other sealing units. The oil

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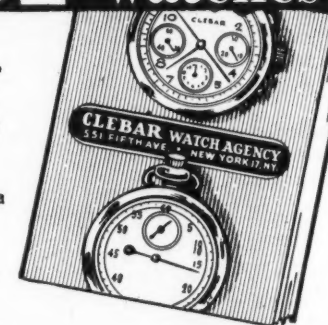
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CHEMICAL PROCESSING

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leaving the manifold is passed through a relief valve that is set to open at a pressure that is about 25 psi higher than the pressure maintained in the reactor. Thereafter, the oil enters the common return line to the central pumping unit. The rate of oil flow to the sealing unit is controlled by a valve in the input line near the sealing unit and, for the particular system described, the rate is adjusted to about 0.125 gpm.

A view of a single reactor unit, including the hydraulic motor, sealing unit, hand-operated flow-control valves, and the rotameters, is presented in Figure 2.

In considering the merit of using the same hydraulic system for operating the motors and maintaining pressure on the oil seal, it was felt that with the oil at the conventional operating temperature of 130° to 140°F, a "hot spot" would be created at the top of the reactor, especially when the reactors were operated at temperatures about 50° to 100°F lower than that of the hydraulic system.

To circumvent this undesirable feature, which would add considerable heat to the reactor and affect the chemical reaction taking place in the reactor, the oil is cooled to within 10° to 15°F of the temperature in the reactor. To obtain better control of the temperature of the oil being delivered, an additional heat exchanger was placed in the feed line to the sealing units. The cooling medium is circulated through this heat exchanger to lower the temperature of the oil to within 3°F of that maintained in the reactor.

In cases where even minute quantities of the oil used might have a deleterious effect on the chemical reaction of the charge, the seals may be lubricated separately with silicone oil or grease, medicinal grade of white oil, specially refined petrolatum, or any other lubricant that is chemically inert.

Some of the desirable features of the system are:

1. Flexibility—the speed of agitation may be varied from 100 to 1500 rpm, and the speed may be determined readily by sight.
2. Sufficient torque is developed to agitate or stir most materials handled in an autoclave (13.8 pound-inches per 100 pounds of oil pressure per square inch). If the torques for certain applications are high, the oil may be fortified with an additive that will impart resistance to metal scoring or extra-pressure lubricant properties to the oil.
3. The space occupied by the driving and sealing assembly is small compared to that of an electric motor and gear drive (diameter 5.5 inches; height, 18.5 inches).
4. The hydraulic motor has long life and reliability since the operating fluid is a lubricant; maintenance costs are low.
5. Safety—there are no exposed moving parts such as open shafts or gears. In hazardous areas, the danger from damaged electrical equipment is eliminated. Inherent noise and vibration resulting from operation of the hydraulic motor are low.

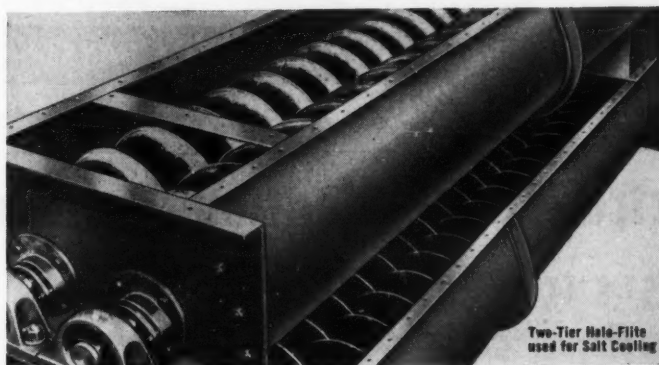
The central pumping unit and the oil motors (model 1F) were supplied by the Denison Engineering Co., Columbus, Ohio. The carbon seal assemblies (Dura-Seal) are furnished by the Dura-metallic Corporation, Kalamazoo, Michigan. The rotameters (Rotasight Flow Indicator, 1-inch, brass body and metering float) were obtained from Fischer and Porter Company, Hatboro, Pa.

(Paper by E. E. Rowland, University of Akron Government Laboratories, Akron, Ohio.)

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Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

Unlimited Capacity

HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

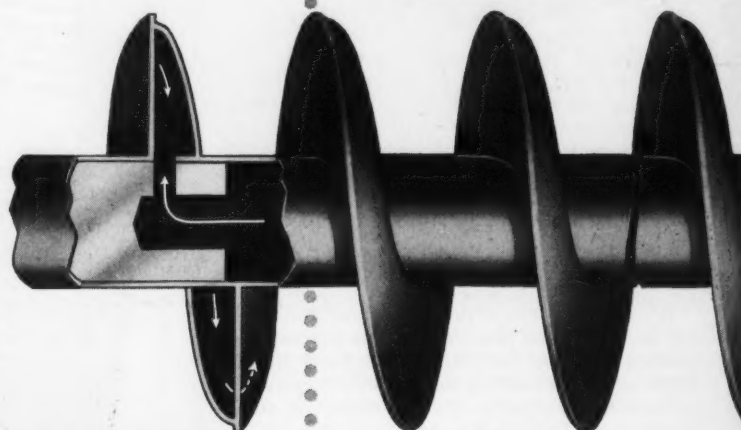
Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!



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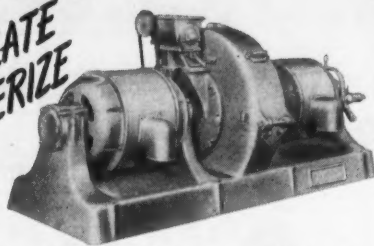
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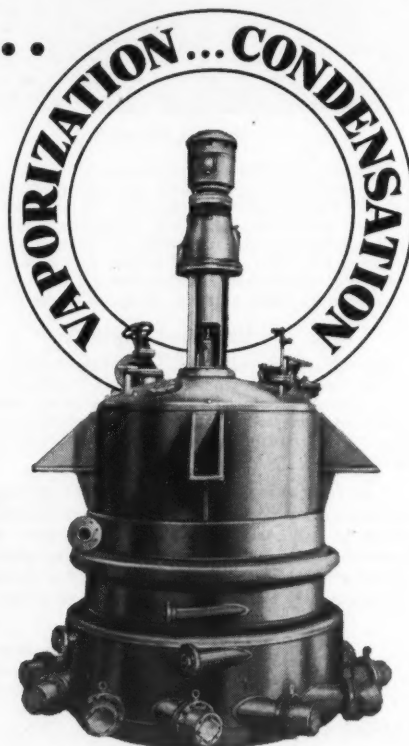
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Briefs . . .

Annual review of analytical chemistry

Reviews analytical methods in the coatings, essential oils and related products, foods, ferrous metallurgy, petroleum, pharmaceuticals and natural drugs, natural and synthetic rubbers and water analysis fields. Particularly valuable for the accompanying bibliographies. Forty-one pages. ("Analytical Chemistry", February, 1951, page 212)

Glass as a coating for steel

Author presents the advantages of glass coated steel. Tells the kinds of steels best adapted to coating and the furnace condition essential to secure a satisfactory coating. Cites many examples showing uses of glass coated steel in tank construction. Five pages and thirteen figures. ("Mechanical Engineering", February, 1951, page 109)

Hydrogen transfer over silica-alumina catalysts

Authors studied hydrogen transfer from naphthenes to olefins in presence of non-hydrogenating catalyst. Specific materials used were cis-decalin and tetralin as hydrogen donors and 1-butene and isobutene as acceptors. Operating variables were catalyst composition, space rate, temperature and duration of run. Equipment and procedure covered. Results at different operating conditions are tabulated and effects of some variables are graphed. 5½ pages and 14 figures. ("Industrial and Engineering Chemistry", February, 1951, page 494)

Properties of experimentally compounded rubbers

Authors conducted a study on the properties of some experimentally compounded rubbers of the butyl acrylate and acrylonitrile type. Physical and chemical characteristics were determined and tabulated. Tests established heat, oil and low temperature resistance. Compositions and cures are stated for all rubbers. 2 pages and 2 tables. ("Rubber Age", March, 1951, page 699)

Importance of surface preparation in painting metals

Author discusses the factors involved in securing adhesion between metal and its surface coating. Lists and comments on the various ways in which a metal surface may be conditioned to receive an adherent coat of paint. Proper procedure is stated for conditions where more than one method for cleaning gives desired results. 4 pages and 8 figures. ("Paint and Varnish Production", March, 1951, page 18)

Preventing mildew on paints

Authors cite the deterioration and destruction caused by mildew on painted surfaces. States the importance of identifying the fungi present since they vary in their resistance to customary fungicides. Certain test methods are described. Some tests were intended to ascertain better procedure — to use a fungicidal wood sealer and then a

CHEMICAL PROCESSING

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

fungicidal paint, or use only a fungicidal paint. Relative efficiency of several fungicides in a specific paint formulation that was tested against a specific fungus are tabulated. 4 pages, 1 table and 4 photos. ("Paint and Varnish Production", February, 1951, page 8)

Gasket materials for sub-zero service

Author states the requirements for gasket materials that must function satisfactorily at sub-zero temperatures. Describes the tests, with necessary equipment, which have been developed to determine the behavior of gasket materials under required service conditions. Findings resulted in Navy Specification 33R9 and Army Specification MIL-R-900. Four pages and eight figures. ("Rubber Age", February, 1951, page 557)

Separation of liquids by thermal diffusion

Author presents experimental results on the separation of liquids by thermal diffusion in a column. Separations do not occur according to pre-conceived ideas. Effects of column height, wall spacing, and temperature are considered. Examples of separations accomplished are related and some are tabulated. Four pages, four figures, and two tables. ("Petroleum Processing", February, 1951, page 132)

Hydrolysis of fats at high temperature

Authors present results of an experimental study of fat hydrolysis in the temperature range 225 to 280°C under 30 to 70 atmospheres pressure. Apparatus and procedure are described and discussed. Effects of temperature of fat-water ratio were ascertained. Analytical methods are stated. Reversibility of the reaction — fat to fatty acids and glycerol — was investigated. Fats used were beef tallow, coconut oil and peanut oil. 5 pages, 6 figures, and 8 tables. ("Industrial and Engineering Chemistry", February, 1951, page 510)

Properties and performance of silicone lubricants

Authors call attention to those conditions of service to which the silicone lubricants are best adapted. Tabulates data on eight silicone lubricants. Data covers physical state, thickening agent, phenyl content, viscosity, consistency and useful temperature ranges. Typical physical properties of silicone greases are tabulated. Data are given as to the effect of various bearing surfaces and loads on wear-preventive properties of silicone fluids.

Attention is called to several industrial applications where these lubricants gave excellent service. 5½ pages, 7 tables, 2 figures. ("Mechanical Engineering", April 1951, page 311)

New Boiler Code Rulings permit Higher Temperatures with INCO Nickel Alloys

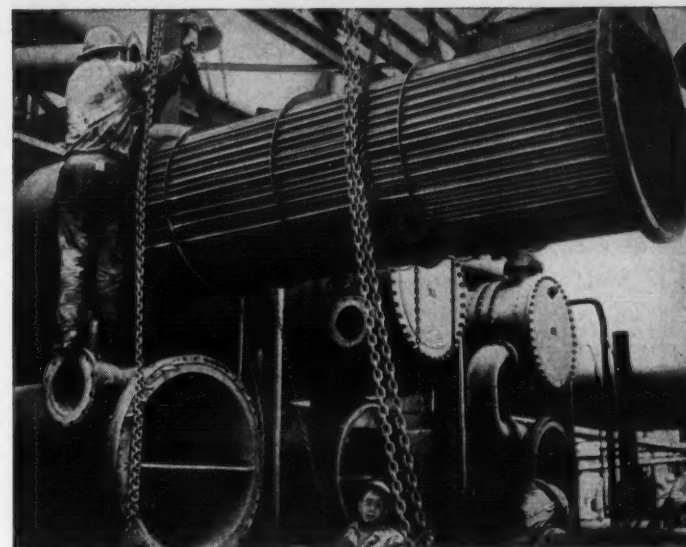
New interpretations of the A.S.M.E. Boiler Code have raised temperature limits on INCO Nickel Alloys used in the construction of unfired pressure vessels.

Also, in addition to annealed Monel, it is now permissible to use stress-relieved Monel, which has substantially higher mechanical properties.

These two modifications of the code mean that it is now possible to build stronger and lighter heat exchangers for higher temperature service, that are insurable because they are built to code requirements.

But this modified code applies only to physical properties. To overcome corrosion troubles, users must assume the responsibility for choosing the correct materials.

A glance at the table will show how some users have been able to get greatly increased equipment life by the proper choice of heat exchanger metals...



A cleaned exchanger tube bundle being replaced in its shell. "Spring-cleaning" like this prevents failures in service and insures efficient heat exchange. Photo courtesy The M. W. Kellogg Co., New York, N. Y.

To see if INCO's Corrosion Engineering Service can help you, write, outlining your problem.

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1	Steam	Caustic	350	2-8 weeks	17 months	Good—still in service
2	Foul Caustic	Steam	300	5 months	25 months	No evidence of corrosion
3	Heavy recycle	Straight run gasoline distillate	550	6665 hours	38,535 hours	Renewed 24 tubes after 22,000 hours—3 tubes plugged at 38,535 hours. Remainder OK.
4	Caustic soda and sodium chloride	Steam	240	10 months	80 months	Good—15 tubes replaced—weld failures
5	Crude oil	Gasoline vapor	300	6-8 months	48-60 months	No inspection

Service information on heat exchangers closely similar to yours is probably not in this table. However, help is available from INCO's Corrosion Engineering Service. From their thousands of data sheets showing corrosion rates in a wide variety of media, it is likely that an answer to your specific problem can be found.

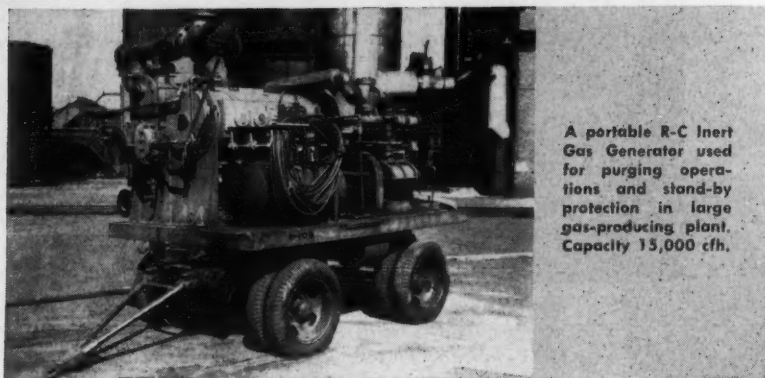
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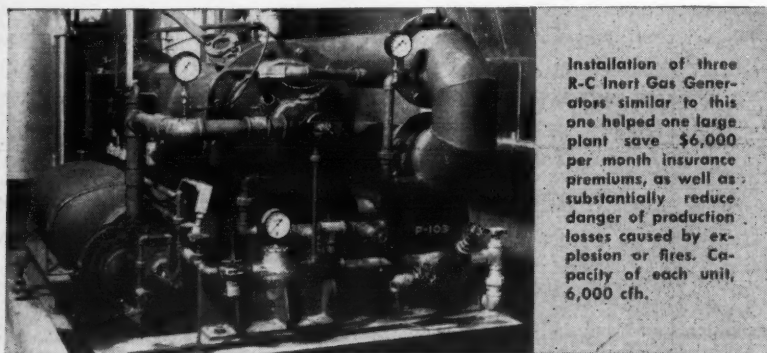
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Techniques for transferring cold liquids

Author describes the techniques developed in the Bureau of Standards laboratories for transferring liquid oxygen, nitrogen, and air from storage containers to the vessels in which they are to be used.

Satisfactory transfer equipment is commented on. Losses, when such equipment is used, can be kept under ten percent. Four and one-half pages, two tables and two figures. ("Refrigerating Engineering", March, 1951, page 251)

Methods for absorbing expansions of long-range transmission piping

Pipe lines subjected to great fluctuations in temperature afford problems in caring for their expansion. The author comments on: absorbing expansion safely and economically, and preventing pipeline movement from removing insulation or displacing any process equipment. Conclusions of practical value to designers are stated. 6 pages and 5 figures. ("Petroleum Refiner", February, 1951, page 69)

Mechanism of the degradation of polyamides

Films of polyamides were exposed to accelerated aging and the results noted as to changes in chemical and physical structure of the polymer. Techniques used in the study are stated. It was hoped that data as to changes would yield information as to how best to minimize undesirable ones. 30 pages, 19 tables, 16 figures. ("Journal of Research N.B.S.", March 1951, page 391)

Semipilot production of sucrose from sorghum

Authors conducted this research looking for a sucrose material to be processed when beets are not available for processing.

States average analysis of sorgho cane and juice and indicates problems involved in juice purification. Compares two processing methods. Tells how starch is removed and how the sucrose is crystallized. Table gives sugar balance through process on basis of one ton cane with 12.94% sucrose. 6 pages, 12 tables, 4 figures. ("Industrial & Engineering Chemistry", March 1951, page 628)

Selenophosphates as lubricant additives

Author describes methods used in the preparation of the selenophosphates used in this research. Tells how these materials were tested for efficiency in preventing oxidation of lubricating oils. Various oils were used with these

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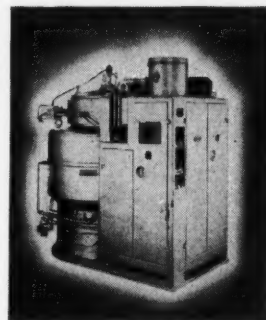
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BRIEFS

antioxidants to ascertain the effect of the lubricant itself. Methods used in preparation of the selenophosphates seem to have a bearing on their antioxidant behavior. 8 pages, 9 tables, 7 figures. ("Industrial & Engineering Chemistry," April 1951, page 876)

Spent pickling acid disposal

Article describes a method by which waste acid is disposed of at a reduced cost; waste discharged from the plant meets highest requirements of State Water Resources Commission.

Flow diagram shows mixing methods for waste water, spent acid, and lime slurry. Proportioning methods are described. Tables state analyses of plant water and effluent. Former costs and present costs are compared. 2 pages, 2 tables, 3 figures. ("Industry and Power," May 1951, page 75)

Spectrophotometric determination of carboxyl in cellulose

A method and technique is described which will detect as little as 0.1 millimole of carboxyl per gram of sample. Quantitative results are as accurate as those obtained using the calcium acetate methods. 3½ pages, 3 figures, 3 tables and bibliography. ("Journal of Research N.B.S.," April 1951, page 288)

Corrosion-resistant cements

A plastic bonded cement is described which is said to be as acid resistant as the customary phenolic type with the advantages of high alkali resistance, and which will withstand temperatures up to 370°F. Examples are cited as to the use of these cements in the construction and the repair of chemical processing equipment. 2 columns, one photo. ("Modern Plastics," May 1951, page 150)

Aging of plastics under various climatic conditions

Authors report on aging tests on plastic materials exposed in (1) Panama Canal Zone (2) New Mexico (3) New York Naval Shipyard (4) Fort Churchill and (5) Point Barrow. Exposures were up to 12 months. Materials were: clear plastic sheet, 5 types; laminated materials, 6 types; and 5 types of molded terminal bars. Tests after exposure were essentially to note changes in the properties customarily evaluated. 12 pages, 6 tables, 3 figures. ("Bulletin, A.S.T.M.," April 1951, page 31)

Protective coatings research

Article tells of the studies made by Bureau of Ships, U.S. Navy. Specifies the lines of research engaged in and states some of the results secured. 4 pages. ("Paint and Varnish Production," April 1951, page 13)

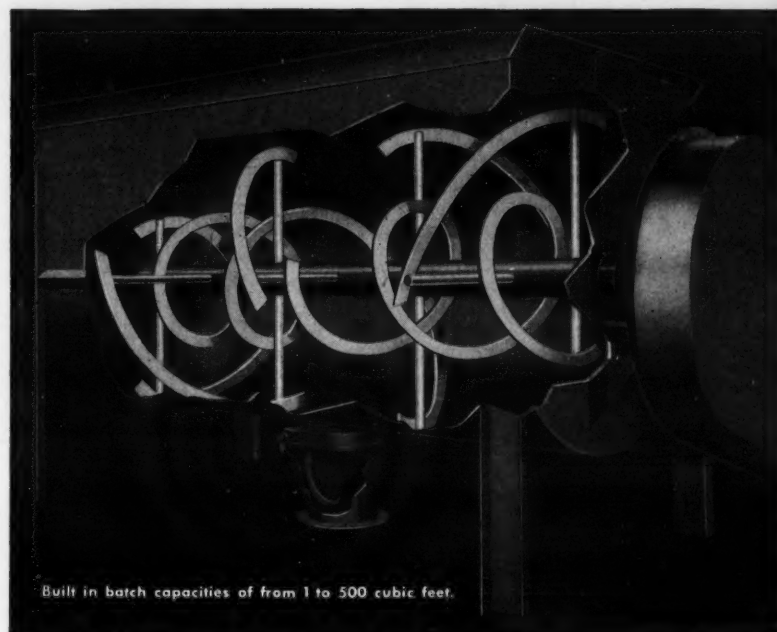
Extractives from ponderosa pine bark

The large supply of ponderosa pine bark available in the Pacific Northwest led to a decision to investigate the possible recovery of products of commercial value which might be extracted from the bark. Preparation of samples for extraction is stated. Methods using several different solvents are told, and extractives identified as to quantity and types. 5 pages, 8 tables, 5 figures. ("Industrial & Engineering Chemistry," April 1951, page 896)

READCO

CHEMICAL
EQUIPMENT

if **FUNCTION**
is your objective...



Built in batch capacities of from 1 to 500 cubic feet.

EXAMINE Readco Heavy Duty Ribbon Mixers from all angles. They are of sturdy all-welded construction with structural steel supports.

Positive operating flush discharge gates eliminate dead spots in the mixing bowl. They are quickly opened, readily cleaned, and provide controlled discharge.

Accurately proportioned ribbons and limited clearance between ribbons and shell eliminate the pile-up of materials at any point. The formation of troublesome agglomerates is eliminated by the limited clearances and spray manifolds, in which liquids are completely atomized and sprayed into the batch in specified amounts at a constant rate.

The efficient spray manifolds provide complete incorporation of liquids and shorten mixing cycles.

The all-welded agitator is easily cleaned and removed from the mixer. It is mounted in outboard anti-friction bearings which are independent of packing glands.

High or low-pressure jackets, and hinged or stationary vacuum covers with adequate charge and inspection openings, are optional. Removable and slotted end type mixers are available.

Readco mixers are built in all sizes. Read Standard Corporation, Bakery • Chemical Division, York, Pennsylvania.

FORMERLY Read Machinery Division
of The Standard Stoker
Company, Inc. ONLY THE NAME
HAS CHANGED.

READ STANDARD
CORPORATION

When inquiring check CP 5016 on handy form, pgs. 2-3



There's a **YALE** hoist for *every* lifting job!

• Let YALE give you a "leg up" when there's lifting to be done. It's good business...helps you get the job done faster...at less cost.

That's because YALE makes all kinds of hoists...electric hoists, hand hoists, wire rope and chain hoists, trolley and hook suspension hoists, hoists with capacities from 500 pounds to 40 tons...each one *exactly* suited to a specific job!

This aluminum YALE Load King with synchromatic load brake, for example, is ideal where portability and fast, easy, hand lifting are desired.

Your YALE distributor can help you select the hoist that will wear longer, work harder and save more money for you. Call on him soon.

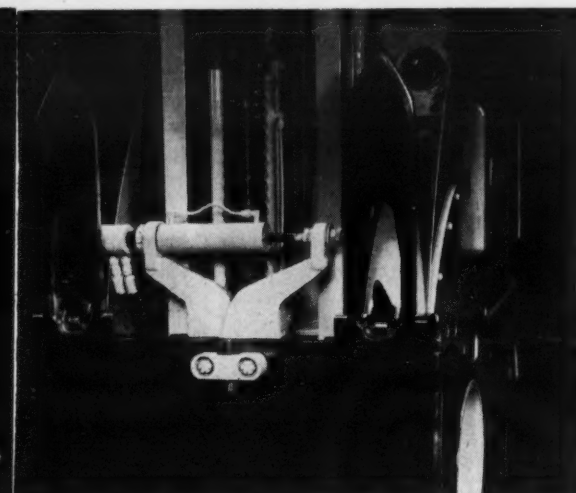
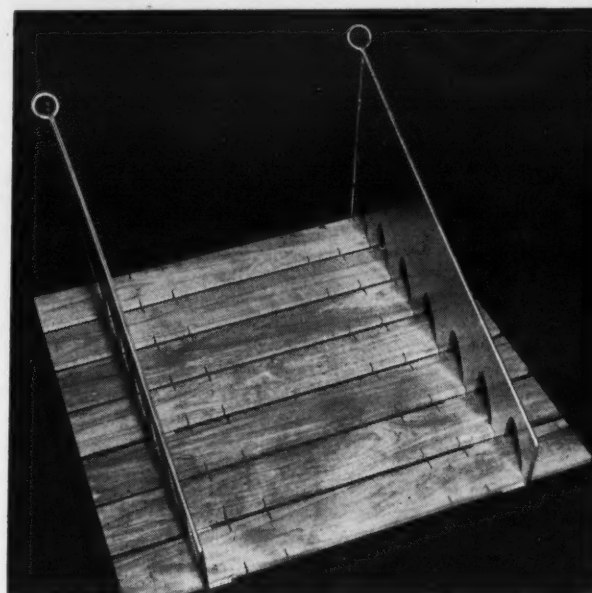
Or write Dept. 126,
The Yale & Towne Manufacturing Co., Phila. 15, Pa.



YALE & TOWNE

YALE is the registered trademark of The Yale & Towne Manufacturing Co.

When inquiring check CP 5017 on handy form, pgs. 2-3

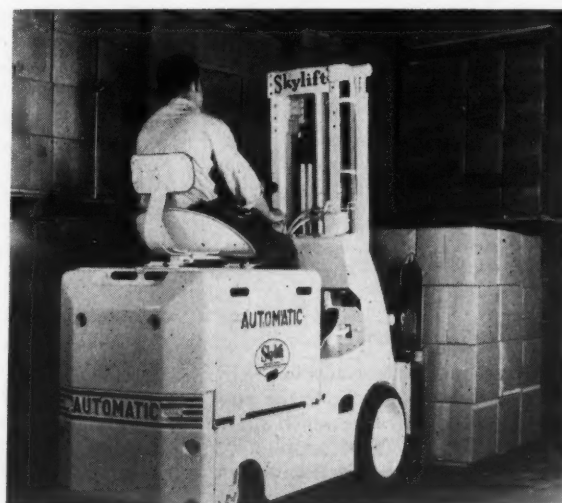


Hooks that engage eyes on pallet wings protrude through opening in foldaway forks which lower when needed

Each metal wing of single layer pallet has an eye which is engaged by hook on truck carriage plate

"Hook 'n Eye" Pallet Handling System Uses No Forks; Saves Vertical, Horizontal Storage Space

**Employs trucks with forks that
fold up — forks permit use with
standard pallets**



One-inch thickness of pallets saves up to 15 inches of vertical storage space in three-high tiering

USES: Designed especially for service where maximum savings in both horizontal and vertical storage space are required. Wide range of applications includes handling loads in and out of storage, spotting materials at various points throughout plant, transporting loads through narrow aisles and loading and unloading freight cars and highway trailers.

Features: No forks are required to lift and move pallets which consist of a single layer of inch-thick boards inserted into a pair of form punched vertical metal "wings", which are located part way in from the sides of the unit. At the top of each wing is an "eye" into which hooks, mounted on carriage plate of the truck, are inserted. (So that this method can be incorporated into present systems, a pair of "foldaway" forks is provided. Being hinged, they fold up vertically when not needed and are latched in place.)

Operator can easily maneuver truck so that hooks engage eyes on the pallet wings. Pallet and load is then lifted easily, moved, spotted, tiered or placed as desired.

When working with hooks instead of forks, operator does not have to back up the truck the length of the forks after stacking a load in order to turn. This advantage, plus the shorter turning radius forkless operation achieves, permits working in very narrow aisles.

Pallets are lighter than conventional ones and cost

CHEMICAL PROCESSING

approximately the same. Because no nailing or bolting is involved in their construction, damaged boards can be easily replaced. Reshipment costs are low because pallet is light and can be disassembled and shipped flat.

Because pallets are only one inch thick, they save as much as 15 inches of vertical space in three high stacking.

Stability in handling light loads is increased by positioning the wings inward from the sides of the pallets. It is possible to carry cases or other loads on the space outside the wings.

Description: Forkless method of handling special lightweight pallets by truck. Permits easy movement of loads in a variety of operations. Typical of advantages in loading and unloading operations is the ease with which box cars may be loaded right up to the door because no space has to be saved for withdrawing the forks.

For simpler load spotting, truck is available with a side shifter attachment. This device permits moving loads several inches to either the right or left of a truck while it is stationary, facilitating stacking loads closer together. Unit is roller-mounted throughout to reduce sliding friction. A simple double-acting hydraulic ram is directly connected to truck's hydraulic system, and is controlled by a directional handle linked to a four-way control valve.

Source: Forkless pallet handling system is a development of Automatic Transportation Co., Dept. CP, 149 West 87th St., Chicago, Ill. . . or for more information check CP 5018 on handy form, pages 2 and 3.

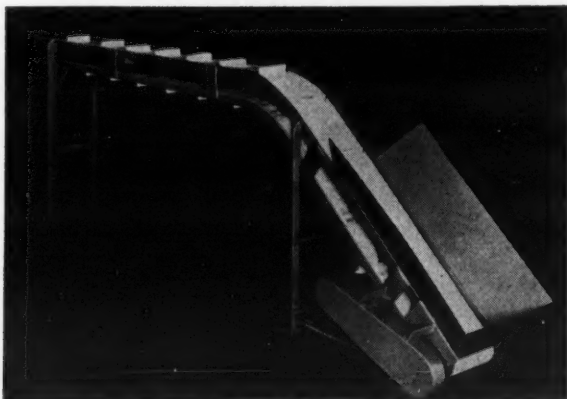
Light packages or loads move at selected speeds on lug type belt conveyor . . .

variable speed drive can be included; 1/4 hp motor

Uses: Especially adapted to packaging operations, or where small, light materials are to be conveyed.

Features: Flexible design permits variations in lengths and other respects, as required by the products conveyed. Framework is of light structural steel.

Description: Conveyor belt is of woven fabric which is easy to maintain. Lugs are of washable canvas.



Conveyor can be used with packaging machine

Drive is by 1/4 hp motor. Speed of conveyor can be adjusted by changing sprockets on motor. If desired, variable speed drive can be incorporated.

Source: Light duty conveyor is built by The Klaas Machine & Mfg. Co., Dept. CP, 4329 East 49th St., Cleveland 25, Ohio . . . or for more information check CP 5019 on handy form, pages 2 and 3.



THE ALL-CRINKLED MULTIWALL BAG

Chase Sharkcraft sharply reduces costly breakage . . . it is, indeed, BUILT TO TAKE IT! Available in 2 to 5 plies of extra strong crinkled kraft. Furthermore, it provides a sure grip . . . it's easier to handle and stack, and you'll like the sharp, colorful printing of this better container.

Get full details on Chase Sharkcraft from your Chase Salesman—and be sure of the most efficient container for your product. He is supported by more than 100 years of experience in providing better bags for American industry and agriculture.

CUTS COSTLY BREAKAGE IN THE PACKAGING OF...

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- Mineral Concentrates
- Seeds • Chemicals
- Pharmaceuticals
- Fertilizers
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Bags for All Industry and Agriculture

- cotton bags of all kinds
- Topmill burlap bags
- Saxolin open mesh bags
- paper and Multiwall bags
- combination bags, liners and specialties



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Gentlemen: Please send me more information about SHARKRAFT bags

for the packaging of.....
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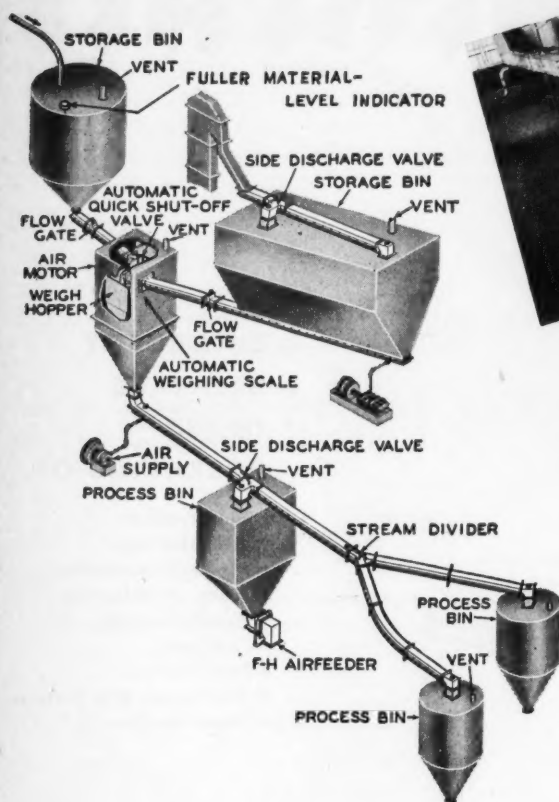
CHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
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When inquiring check CP 5020 on handy form, pgs. 2-3

only the material moves

**in the F-H
Airslide®**



It's simple—it's sure—it's sanitary—it's safe, (no hazardous moving parts)—it saves—this improved method of *flowing* fine, dry materials. The F-H Airslide Conveyor is being more and more widely considered, and used, in various industries. It eliminates dust nuisances, saves man-hours, keeps production flowing smoothly at minimum operating cost.

The F-H Airslide consumes little power—only that required for a small volume of air at low pressure. Valuable floor space is saved, and the system can be installed with a flexibility impossible to obtain with a conventional conveyor.

Chemical processing plants of every size and type will find the Airslide Conveyor the solution to the problem of transporting fine, dry materials, with maximum efficiency and economy.

A Fuller engineer can show you how the system can be put to work for you—how you can increase efficiency while you reduce operating costs. Why not contact us today?

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DRY MATERIAL CONVEYING SYSTEMS
AND COOLERS—COMPRESSORS
AND VACUUM PUMPS—FEEDERS,
AND ASSOCIATED EQUIPMENT

FULLER COMPANY, Catasauqua, Pa.
120 So. LaSalle St., Chicago 3
420 Chancery Bldg., San Francisco 4

FH-20

When inquiring check CP 5021 on handy form, pgs. 2-3

MATERIAL HANDLING

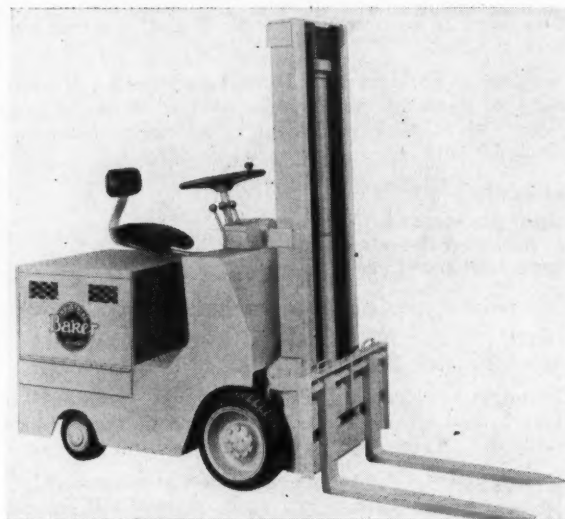
Maneuverability stressed in 2000-pound capacity fork truck . . .

loads can range up to forty-eight inches in length
Uses: Fork truck for 48-inch-long, 2000-pound loads.

Features: Maneuverability is stressed in truck.

Description: Specifications of Type FS-20 Center-control truck are as follows:

Width	32 1/2"
Outside Turning Radius	65"
Minimum Intersecting Aisles	59"
Right Angle Turn	79 1/2" (plus load length)
Overall Height	83"
Telescoping Lift	130 1/2" loaded
Initial Lift	65" loaded
Forks: length	36"
outside spread	32"
section	4 x 1 1/2"
Wheel Base	38"
Drive Tires	17-3/4 x 5
Steering Tires	10 1/2 x 5
Recommended Battery	36 v, 350 amp-hr
Weight with Battery	4950 lb



2000-lb capacity fork truck

Source: Development of Baker Industrial Truck Div., The Baker-Raulang Company, Dept. CP, 1250 W. 80th St., Cleveland 2, O. . . or for more information check CP 5022 on handy form, pages 2 and 3.

Upper load limit of trolley hoist line is three tons . . .

two types of assemblies — plain trolley, geared trolley

Uses: Trolley hoist line has upper load lifting capacity of 3 tons.

Features: Especially suited for application where a close headroom assembly is required. Efficiency, light weight, free operation around minimum radius curves are reported.

Description: "Wright Safeway Army Type Trolley Hoist" is available in two types: plain trolley assembly has chilled tread wheels equipped with ball bearings, steel side plate, and connections to load bar. It is adjustable for a wide range of beam sizes, and can be

CHEMICAL PROCESSING

MATERIAL HANDLING

changed from plain to geared, or vice versa, in a few minutes time since both the plain and geared mountings are identical. Capacities are 1/2, 1, 1 1/2, 2 and 3 tons in the various models.

Source: American Chain & Cable Company, Inc., Wright Hoist Division, Dept. CP, York, Pa. . . . or for more information check CP 5023 on handy form, pages 2 and 3.

Two-wheel hand truck supports bulky loads safely by means of lifting attachment . . .

loads brought to upright position, held up for strapping or placed on dolly

Uses: For service in warehouses, shipping rooms and other applications where handling of loads of great bulk or weight, or both, presents difficulty.

Features: Makes it possible for one man to pry up load off floor with nose of hand truck and then, by



Truck attachment lifts bulky loads off floor

pushing a handle, lock it securely in raised position. Load then can be placed on a dolly, strapped or brought to upright position. Saves labor and protects workers from possible injury.

Description: Attachment is especially designed for

two-wheel, steel-framed, hand trucks and for use in connection with maker's dolly (T-1114). Illustration shows how load is supported off the floor. Second view indicates handle, spring loaded lock, guide and legs. Operation is simple. All user has to do is lift load, release attachment, push forward to full travel. Truck is then firmly anchored as shown in illustration.

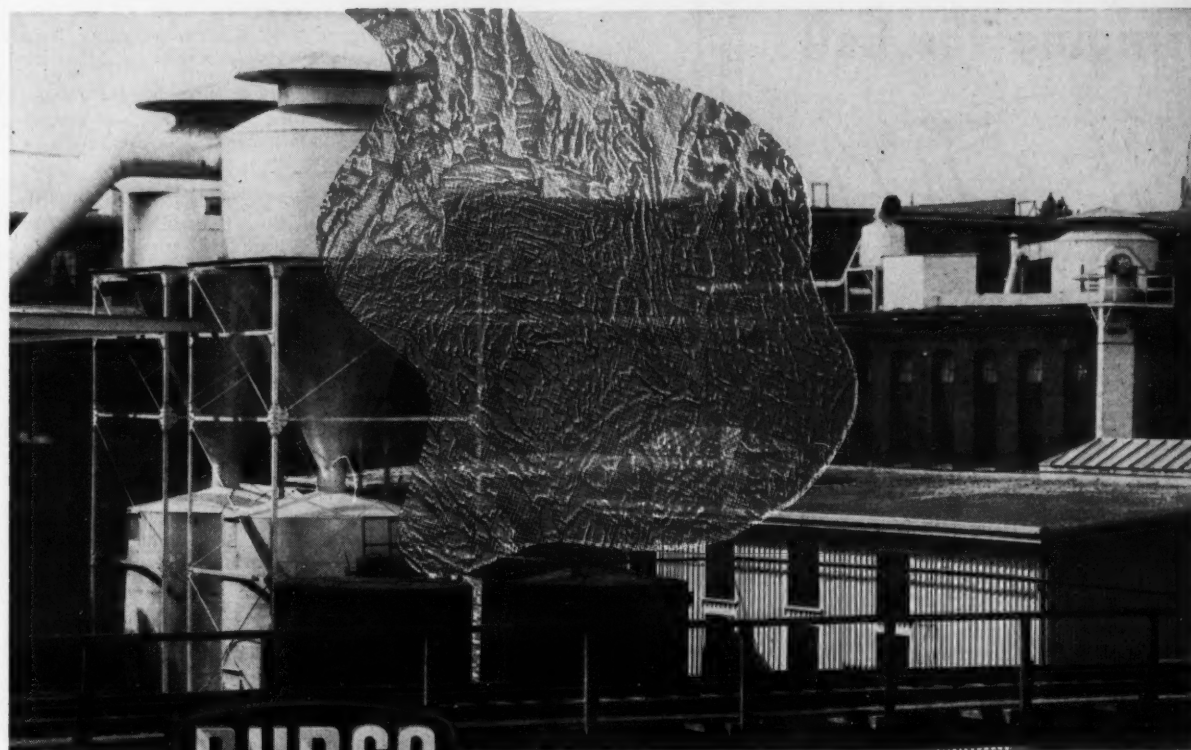


Hand truck with safety lifter

Source: Series 9,000 two-wheel hand trucks with Saf-T-Lift attachment are built by The Fairbanks Company, Dept. CP, 393 Lafayette St., New York 3, N. Y. . . . or for more information check CP 5024 on handy form, pages 2 and 3.

JUNE, 1951

where corrosion hits hardest...



technical service engineers the answers

The Duriron Company's branch offices are located in the thirteen cities closest to America's major industrial areas. All offices are manned by graduate chemical or mechanical engineers.

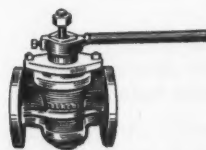
Thus, DURCO'S selling force is an extension of its engineering facilities in Dayton. The DURCO man who calls on you is qualified, both by education and experience, to come quickly to grips with your corrosives-

handling problems. He speaks your language—speaks the language of his own engineering department—and thus reaches the right decision in the shortest time.

Too, our continuing development program is responsible for solving many general corrosion problems "all in a day's work."

Isn't this kind of technical service of particular value to you... wherever and whenever corrosion hits hardest?

The Duriron Company, Inc., Dayton, Ohio



DURCO products include PUMPS, VALVES, EXHAUST FANS, STEAM JETS



When inquiring check CP 5025 on handy form, pgs. 2-3

Is your bag packer ringing the bell?

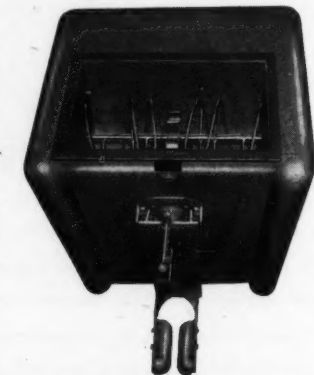


Are your bag packers taking a beating? Have they enough capacity? Are you nursing baggers that can't take it and don't dish it out? Is your production hobbled by tired equipment?

Right now you, like everyone else, are probably faced with the problem of increased production...trying hard to get the last ounce of performance out of your equipment. The chips are down and equipment manufacturers' claims must be translated into on-the-job performance. If you are not satisfied in every detail with your bagging equipment, you'd better take stock and plan for improvements and replacements—

THAT'S WHERE STOKER MODEL 1-5 BAG PACKERS FIT THIS PICTURE

DESCRIPTION—Stoker Model 1-5 Bag Packers are designed to fill valve bags with a wide variety of granulated or powdered materials. These packers include many features not found in conventional bag fillers. Stoker Packers are fully adjustable to accommodate different bag sizes—the same machine may be used on a number of materials—rate of flow is easily controlled—positive force feed in both hopper and filling nozzle puts the material in the bag exceptionally clean and free from dust and blow—the ribbon agitator in the hopper eliminates bridging—and, Stoker Packers will pack predetermined weights within ounces.



U. S. Patent No. 2,548,075. Other Patents Pending.

APPLICATIONS—Stoker Model 1-5 Bag Packers are now being used successfully in commercial operations handling these materials: Sulfur, pulverized coal, clays, sugar, cottonseed meal, malt, yeast, cellulose gum, doughnut flour, rosin, paint pigments, asbestos, some plastics, titanium, alfalfa meal, insecticide dusts, certain fertilizers and many other hard-to-handle materials... AND, STOKER MODEL 1-5 PACKERS DO IT AT THE APPROXIMATE RATE OF ONE CUBIC FOOT IN FIVE SECONDS.



SEND TODAY FOR COMPLETE INFORMATION—make certain that when the bell rings for faster and cleaner bagging operations your plant will be in peak condition and come out swinging—sure to go the limit.

H. L. STOKER CO.

111 SOUTH COLLEGE AVENUE, CLAREMONT, CALIFORNIA

When inquiring check CP 5026 on handy form, pgs. 2-3

MATERIAL HANDLING

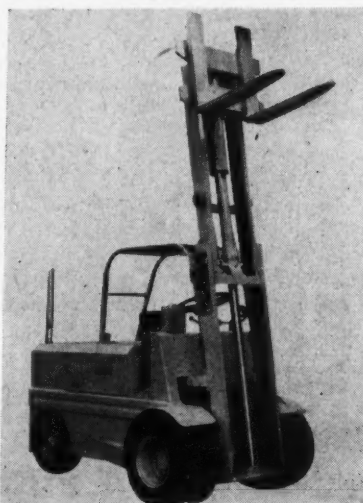
Diesel power makes fork truck suitable for use where fire hazards exist . . .

clutch life lengthened 5 to 8 times by using fluid transmission; other wear also reduced

Uses: For applications where fire hazards exist, where there is a limited amount of fresh air, and in outdoor areas where continuous heavy-duty operation is a necessity.

Features: Has a 6-cylinder diesel engine with a continuous rating of 70 hp. Because it uses a less volatile and flammable fuel than gasoline, this fork truck may be the answer to many applications which prohibit the use of gasoline vehicles. For further safety, a condenser type water muffler screens out sparks in the exhaust gases.

Description: Truck is designed principally for outdoor use, is equipped with standard Bosh governor controls. All power impulses from the engine are transmitted through a double impeller coupling whose use eliminates chattering, stall-



Has a 70 hp diesel engine

ing, damaging starts and stops, and assures the availability of full engine power for heavy pulling and steep ramp work.

Smooth operation is said to lengthen clutch life 5 to 8 times as well as reducing wear on other truck parts. Chassis clearance is over 9 inches, sufficient for most uneven terrain.

All undercarriage operating and steering connections are cadmium plated. Tires have flat sidewalls to minimize bruising and failure.

Drive unit assembly, consisting of engine, coupling, clutch assembly, transmission, differential and drive wheels, can be removed from the truck by unfastening 2 pins, 4 shock absorber bolts and water, fuel and hydraulic lines.

Gives detailed specifications on styles of skip hoist

Skip hoist detailed in 8-page, 2-color bulletin is used for lifting and dumping any free-flowing material, whether in bulk or containers — bags, barrels, etc. Hoists are available in wide range of styles and sizes. They may be mobile type, overhead cranerail type, or permanent mounting type; may be powered by air or electric motor;

NO WAITING FOR HELPERS

He picks it up and is away!

The TRUCK for BARRELS and DRUMS



Yes, about as quick as you can say it. One Man can pick up loads weighing as much as 800 pounds and be on his way, with a —

SABIN BARREL TRUCK

SAVES TIME AND RELIEVES PREVIOUS HELPERS FOR OTHER WORK.

It is easy to handle. You simply run truck up to container, hook on at top, and adds to ease and safety in moving loads. Exclusive third wheel feature pull back on handle to pick up load.

Write for Bulletin on full line of Sabin Barrel and Drum Trucks.

THE SABIN MACHINE CO.

6534 Carnegie Avenue • CLEVELAND 3, OHIO

When inquiring check CP 5028 on handy form, pgs. 2-3



HERE'S YOUR PARTNER TO BIGGER SAVINGS IN PALLETIZING

"Weld-Bilt" Pallet-Type HYDRAULIC LIFT TRUCK

"Weld-Bilt" PRODUCTS

You'll speed up and simplify pallet-moving of materials — with the "Weld-Bilt" Pallet Truck! It's built to handle a greater variety of single or double-faced pallets easier and faster. Easier on truckers, too.

Check the design and construction of the "Weld-Bilt" and you'll know why. The sturdy forks, with their greased-for-life ball bearing wheels are easier to handle and position under loads of 2,000 and 4,000 lbs. Other features include: Multi-stroke hydraulic lift, accelerator type lowering pedal, "anti-kick-back" safety handle, front wheel equalizer, and many others — all built for longer service, easier operation.

WRITE FOR "WELD-BILT" PALLET TRUCK BULLETIN 1149.

WEST BEND EQUIPMENT CORP.

MATERIALS HANDLING ENGINEERS

319 WATER STREET • WEST BEND, WISCONSIN

PORTABLE ELEVATORS • SINGLE STROKE LIFT TRUCKS
HYDRAULIC LIFT TRUCKS • TWO WHEEL TRUCKS
SPRING-BEARING PLATFORM TRUCKS • SKID PLATFORMS

When inquiring check CP 5029 on handy form, pgs. 2-3

MATERIAL HANDLING

and may be equipped for dusty or explosive atmospheres. Eight standard types are available, with special types on order.

Hoists come in light or heavy duty models. They will handle loads to 1000 lb, lifting them as high as the third floor in some models. All units have adjustable upper and lower limit switches; one or more intermediate switches may be added for dumping at different heights. Accessories are available to meet specific requirements — time relays, etc. Full details are contained in "Upanover", issued by Jacob House & Sons, Dept. CP, 52-54 St. Paul St., Buffalo 8, N. Y. When inquiring specify CP 5030 on handy form, pages 2 and 3.

Protection against overloading featured in fork truck . . .

weight parts are positioned for maximum counter-balance with loads

Uses: For materials handling in small and medium sized plants.

Features: Overall length of truck is only 55½", exclusive of the forks. Width is 31". Dimensions permit high maneuverability, enable truck to fit into small elevators.

Primary driving wheel leaves the floor when truck is overloaded so that unit can not be driven under such circumstances.

Method of moving forks and telescopic sections vertically uses a "Caterpillar Wheel". There are four such wheels on the fork carriage and four additional ones

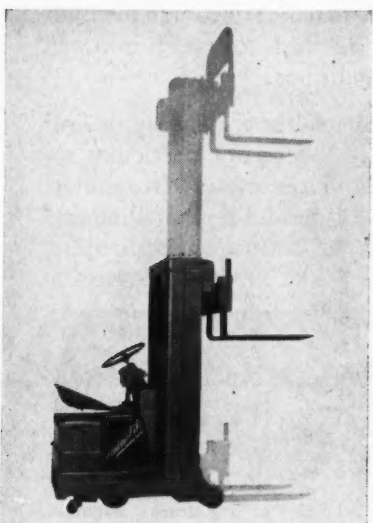
to take the total thrust on the main frame. A series of hard steel rollers mounted on a continuous chain revolves about a long equalizing member so that line contacts are multiplied when pressure occurs. This method reduces unit pressure and friction.

Description: To insure ability to stack in freight cars and motor trucks, the forks have a free lift of 63" before any parts of the machine rise.

Other specifications include minimum height of 83", 126" maximum lift of forks, and a load capacity of 2000 lb at a distance of 15" from face of the forks. A forward mast tilt of 5° and a backward mast tilt of 10° are provided.

Control equipment includes a pushbutton system for all movements of mast and carriage. Control is of dead man "inching" type to eliminate functioning of machine when it is unattended.

Source: Market Forge Company, Dept. CP, Everett, Mass. . . . or for more information check CP 5031 on handy form, pages 2 and 3.



Fits into small elevators

It's the
unseen
quality
that produces
true economy
in Gaylord
Containers

Here
Are Your
1970 Boxes

Talk about control!

CORRUGATED AND SOLID FIBRE BOXES
FOLDING CARTONS
KRAFT BAGS AND SACKS
KRAFT PAPER AND SPECIALTIES

From the moment the seedling is planted by Gaylord foresters until the shipping container is delivered, every step in growing and manufacturing is supervised by Gaylord specialists. It's this kind of experienced control that enables Gaylord to build boxes of unsurpassed quality for many of the country's largest users.



GAYLORD CONTAINER CORPORATION

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EASTERN MANUFACTURER

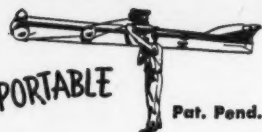
**CUTS
FEEDING
COSTS 1/2**



with this **GENERAL
PURPOSE**

Handy-Handler CONVEYOR

THE ORIGINAL
ON-THE-SHOULDER PORTABLE



Pat. Pend.

Normally, two men were required to keep the stokers filled for these two large boilers in an eastern manufacturing plant.

Now, one man does the job, cutting labor costs in half. In fact, this Handy-Handler conveyor operates day and night, 7 days a week, handling close to 15 tons of stoker coal every 24 hours.

You'll be amazed how this low-cost conveyor handles all kinds of bulk materials—from box car to truck, truck to storage, storage to conveyor line.

The 16-ft. model weighs only 97 lbs. with quick-detachable power unit removed. Construction is of tough, lightweight aluminum alloy. Wear points are reinforced with steel plate. Available with or without dolly. Choice of engines or electric motors. Also made in lengths from 10 to 20 ft.

Write for FREE Belt Handy-Handler literature and price schedule or ask for a representative to call.



THE BELT CORPORATION

7404 STAHL RD.

ORIENT, OHIO

When inquiring check CP 5032 on handy form, pgs. 2-3

Page 80

MATERIAL HANDLING

**Length of 69 3/4 inches
makes pallet truck
maneuverable . . .**

truck is battery-powered, driver-lead type with max capacity of 4000 or 5000 pounds

Uses: Electric pallet truck with max capacity of 4000 or 5000 lb.

Features: Compact lifting mechanism is set on power head instead of on uprights, providing better vision for operator.

Description: Driver-lead truck measures 69 3/4" long; mast height is 83"; lift is 70". Battery is protected by steel enclosure with hinged doors and drop pin lock



Showing use of electric pallet truck in tiering

for quick battery changes. Brake is on motor shaft. Truck can be operated with handle in upright position. Control is full magnetic contactor type.

Source: Transtacker 101 is made by Automatic Transportation Company, Dept. CP, 149 W. 87th St., Chicago, Ill. . . or for more information check CP 5033 on handy form, pages 2 and 3.

**Picking up pallet loads
by fork truck speeded by
use of dollies . . .**

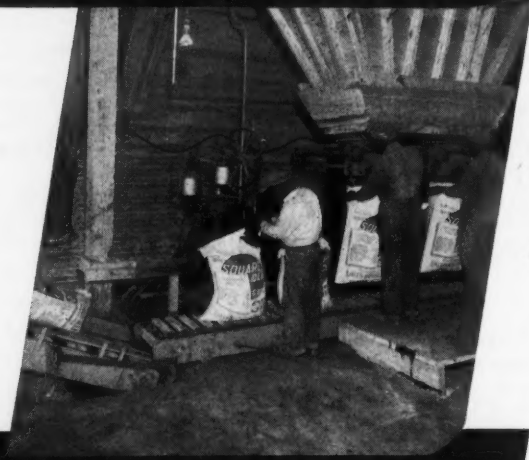
aids operations where floors cannot support both load and truck; useful in box cars

Uses: For easily moving palletized loads to a point where fork trucks can operate safely and efficiently. Especially serviceable where condition of floor or truck bed will not support combined weight of a load and fork truck. Permits easy movement of pallet loads by hand from assemblies and similar points.

Features: Lightweight, easy to carry, strong tubular construction. Contribute to more economical fork truck operation and handling of materials.

Description: A specified number of rollers, depending on load and floor, may vary from 6 to 10 to provide necessary support and mobility. High roller concentricity and large diameter full ball bearing hubs assure easy

Bag Closing Machines for Every Need . . .



**...from UNION SPECIAL'S
Complete Line! . . .**

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your particular requirements: 25 different styles of machines! 10 styles of sewing heads! For any kind and size of bag—paper, cotton, burlap, or jute. ASK FOR ILLUSTRATED BULLETIN No. 200

**SEND FOR THIS
ILLUSTRATED BULLETIN!**



● Get your copy of this 16 page illustrated bulletin presenting helpful data and charts on the complete Union Special line of bag closing machines. Contains information on sewing heads, columns, conveyors, accessories, and overall dimensions, plus more than fifty illustrations of machines and plant installations. Ask for your copy.

**Union Special MACHINE
COMPANY**

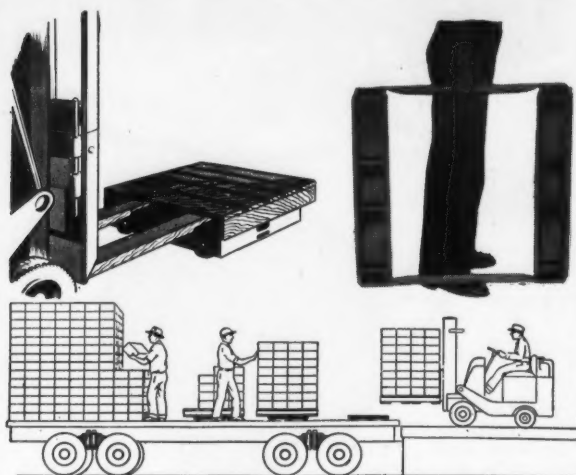
442 North Franklin St.

Chicago 10, Illinois

When inquiring check CP 5034 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING



Dollies move loads over weak floors to fork trucks

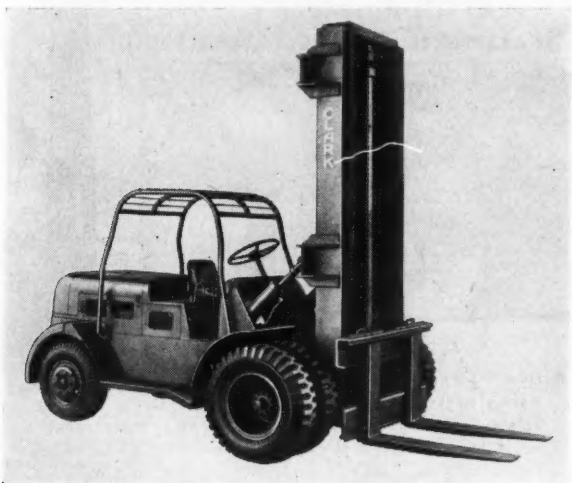
operation either on smooth or uneven floors. Sizes of pallets now offered range from 30 x 30" to 48 x 48". Other sizes available on order.

Source: Roll-Rite Corp., Dept. CP, 801 Jefferson St., Oakland 7, Calif. . . . or for more information check CP 5035 on handy form, pages 2 and 3.

Maneuverability highlights 7½ ton fork truck

Uses: Fork truck has been especially designed for out-door handling loads up to 7½ tons.

Features: Use of a 22" diameter hand wheel operating a hydraulic power steering control makes the truck



7½ ton capacity fork truck

easy to steer and maneuver in spite of its tremendous size. Steering linkage can be mechanically operated in event of engine stoppage.

Description: "Yardlift-150" has an extra-wide axle to provide stability under load. Frame and all component parts are of heavy construction.

Source: Development of the Clark Equipment Company, Industrial Truck Division, Dept. CP, Battle Creek, Mich. . . . or for more information check CP 5036 on handy form, pages 2 and 3.

An Important Message To All Firms Having a Bag Closing Operation

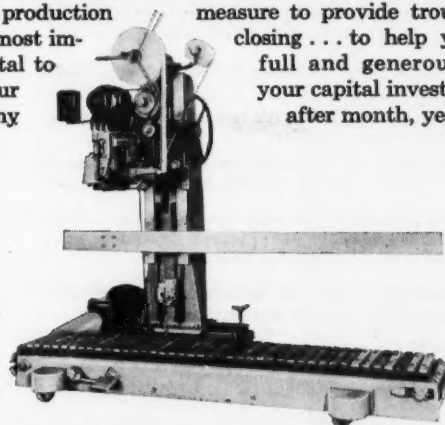
A GREAT DEAL OF MONEY is invested in your plant. To justify that investment, your equipment, raw materials and labor must be coordinated to produce a finished, profit-earning product.

If one link in your production-chain breaks down, and the entire operation comes to a halt—you lose money.

A bag closing machine is only one link at the end of your production line. We consider it a most important link . . . as vital to the daily success of your plant's operation as any

other link in the chain.

We have built into our Bagpakers® extra margins of precision and strength to reduce the risk of breakdowns to as near the vanishing point as possible. Welded steel construction, heavy-duty working parts, precision sewing units—plus the extra insurance of expert service by Bagpak engineers—all these have been added in full measure to provide trouble-free bag closing . . . to help you assure a full and generous return on your capital investment, month after month, year after year.



Full details and specifications on the better Bagpaker will be sent to you on request. Ask for brochure 260 P

International Paper Company

BAGPAK
DIVISION

220 East 42nd St., New York 17

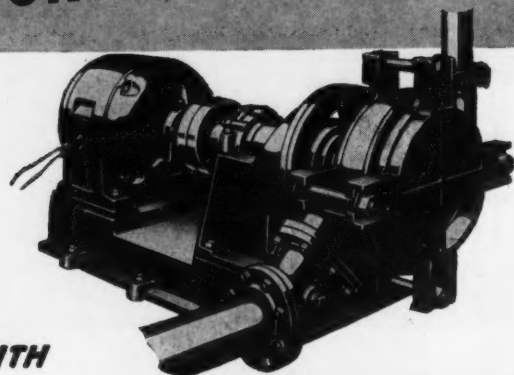
BAGPAK MULTIWALL BAGS

BAG PACKAGING MACHINES

BRANCH OFFICES: Atlanta • Baltimore • Baxter Springs, Kansas • Boston • Chicago • Cleveland • Denver • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco.
IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa.

When inquiring check CP 5037 on handy form, pgs. 2-3

Longer Hours of... CONTINUOUS SERVICE



WITH
A

MORRIS TYPE R SLURRY PUMP

The 4 features of the Morris Type R Slurry Pump mean low-cost operation... minimum "lay up" time.

- 1 **Easily dismantled**—Impeller and shaft sleeve are renewable without disturbing piping or bearings.
Four easy-to-get-at outside clamping bolts hold impeller, liner, shell and cover firmly in place.
- 2 **Simpler design**—The Morris Type R Slurry Pump has no troublesome internal bolts or studs.
Gland is under suction pressure only. Hence, it's less vulnerable to abrasive solids... less subject to packing troubles.
Four adjusting screws close the worn clearances on the suction side of impeller. This adjustment moves the entire rotating assembly as a unit.
- 3 **Corrosion-abrasion resistant**—You may have the Morris Type R with its moving parts in any of various metal alloys, depending upon the kind of slurry you handle. Parts are quickly interchanged.
- 4 **Shell is interchangeable for right or left-hand rotation**—Permits 72 different combinations of suction and discharge nozzles.
- 5 **FREE TECHNICAL SERVICE**—Morris Engineers have been building pumps for more than 80 years. They will be glad to recommend the pump best suited to your needs. No charge or obligation.

FOR LESS TROUBLE...
LESS MAINTENANCE...
LESS LAY-UP TIME...
and LONGER HOURS OF
CONTINUOUS OPERATION

Specify
**MORRIS TYPE R
SLURRY PUMP**

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS Centrifugal Pumps

When inquiring check CP 5038 on handy form, pgs. 2-3

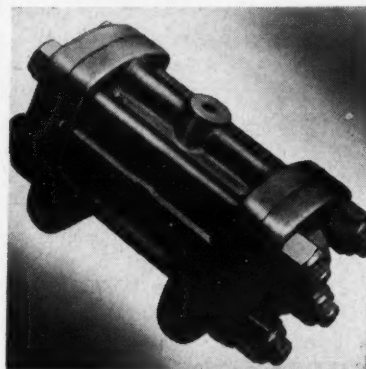
MATERIAL HANDLING

"In-line" material flow vibrated by chute- mounted units . . .

also install on conveyors,
screens, tables

Uses: Designed for mounting parallel to the longitudinal direction of material flow to assure positive "in-line" transmission of powdered and granular materials. Slag, ore, coal, grain, and chips are typical of products handled. Also operates in horizontal or vertical position with equal efficiency.

Features: Provides extremely powerful vibration in applications requiring intermittent as well as continuous operation. Corrosion-proof bronze alloy cylinder liner assures thorough and proper lubrication, full-powered starting, and high-speed operation.



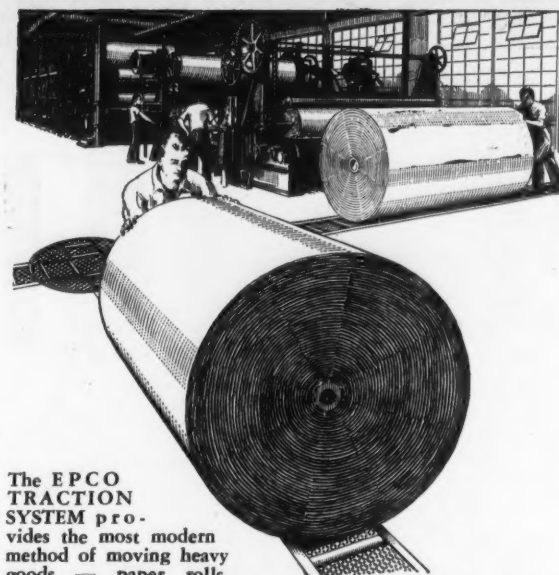
Heavy duty air vibrator

Description: Units operate on standard 80 psi line pressure, measure 8 3/8" in overall length, and have 3/8" mounting bolt holes set on 4" centers. Weight is 21 lb. Vibrators are furnished to take either a 1/8 or 1/4" hose fitting in either steel or brass. Accessories include automatic air line lubricator and knee or hand operated control valve.

Source: Series 80 vibrators are built by SPO, Inc., Dept. CP, 6522 Grand Division Ave., Cleveland 25, Ohio . . . or for more information check CP 5039 on handy form, pages 2 and 3.

Gives full specifications for roller chains

Thirty-page illustrated catalog contains complete specifications for various roller chains. Hints on layouts, installation, maintenance, and lubrication are included. Catalog ARC-51 is issued by Atlas Chain & Manufacturing Co., Dept. CP, Philadelphia 24, Pa. When inquiring specify CP 5040 on handy form, pages 2 and 3.



The EPCO TRACTION SYSTEM pro-

vides the most modern method of moving heavy goods — paper rolls, drums and vats of chemicals. Epcos is now used in more than 100 paper mills and corrugated box plants.

EPCO ball-bearing Trackage never requires more than 4" foundation and may be installed in any type of flooring. Hand and power trucks can cross without causing damage to trackage. EPCO system keeps the load on the floor, avoids accidents, saves man hours; replaces caster wheel dollies and eliminates damage to floors.

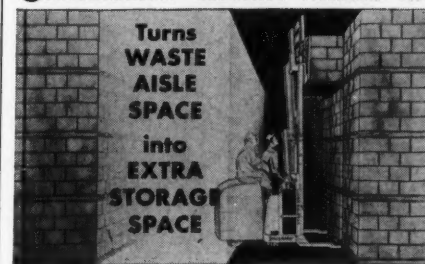
Let us help plan your layout.

ENGINEERING PRODUCTS CO., Inc.
126 South Michigan Ave., Chicago 3, Ill.

When inquiring check CP 5041 on handy form, pgs. 2-3

The truck of the future — TODAY!

LYON-Raymond's SPACEMAKER ELECTRIC TIERING TRUCK



- Now there's a new standard in electric tiering trucks, LYON-Raymond's SpaceMaker!
This new rider-type truck adds as much as 1/2 more space to your present storage facilities.

How — by trimming 4 to 6 feet off of every aisle for use as additional storage. LYON-Raymond's SpaceMaker actually right-angle tiers 4-ft. pallet or skid loads 130" high from aisles that are only 6-ft. wide!

The SpaceMaker is a shorter truck — needs no counterweight. It maneuvers like magic — has a full 200° turning arc. And it's lighter too — can be used in low-capacity elevators and on lighter-capacity floors. Ask to see LYON-Raymond's SpaceMaker demonstrated at the installation nearest you!

FREE BULLETIN
Bulletin 702 tells the SpaceMaker story — send for it today!

LYON-Raymond Corporation

Skid and Pallet Lifts • Hydraulic Elevating Equipment
Electric Forks • Trucks • Positioning • Sheet & Box Handling

5744 Madison St., Greene, N.Y.

When inquiring check CP 5042 on handy form, pgs. 2-3

CHEMICAL PROCESSING

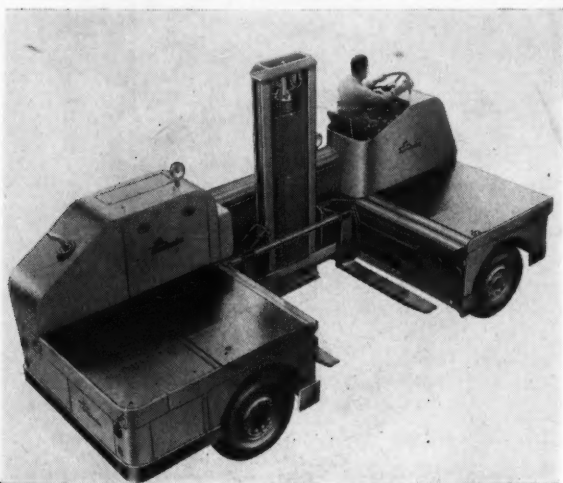
MATERIAL HANDLING

Long loads picked-up from side and carried on truck's 2 platforms into narrow spaces . . .

2½, 5 and 15-ton units operate as side loading fork truck, yard crane, cable reeler or steel strip carrier

Uses: Facilities for performing a variety of essential handling operations in one rugged, easily operated unit. Especially suited for handling lengthy materials and moving in and out of narrow aisles, where front-lift units of comparable size might find it difficult to move in its load or maneuver. Truck functions as a fork lift unit, transporter, yard crane, spooled cable reeler and strip steel carrier.

Features: Side-loading cuts costs, eliminates waste space and speeds all movement of materials. All motions are regulated by handy controls by one worker who can govern lifting of load, putting it aboard, delivering it to destination, unloading and stacking it, transferring it to truck or rail car, or placing it in storage. Waste motions are eliminated, no unnecessary backing, turning,



5-ton double platform fork-lift truck loads from side

stopping or starting. Turning radius is 25°. A typical loading cycle requires 20 seconds after which loads up to 10,000 lb are ready to be moved. Power hydraulic booster makes steering extremely easy in spite of truck's weight, size and heavy loads.

Description: When used as a fork lift truck only, it lifts, loads, stacks and hauls. It handles material of any length from 8 to 66' on its double platforms, shorter materials being handled on the forks. Various special attachments quickly adapt the truck to highly specialized requirements.

Unit has 139" wheelbase with front and rear treads of 72". Length overall is 234", width overall, 89½". Engine is 6 cylinder with maximum hp of 114. Length of lifting forks is 54", width of fork 5". Brakes are booster hydraulic. Transmission and power drive are mechanical, 5 speeds forward and reverse.

Driver's seat is extremely comfortable and well positioned for complete visibility. A U-guard protects driver and a full vision, entirely transparent cab is available as an accessory.

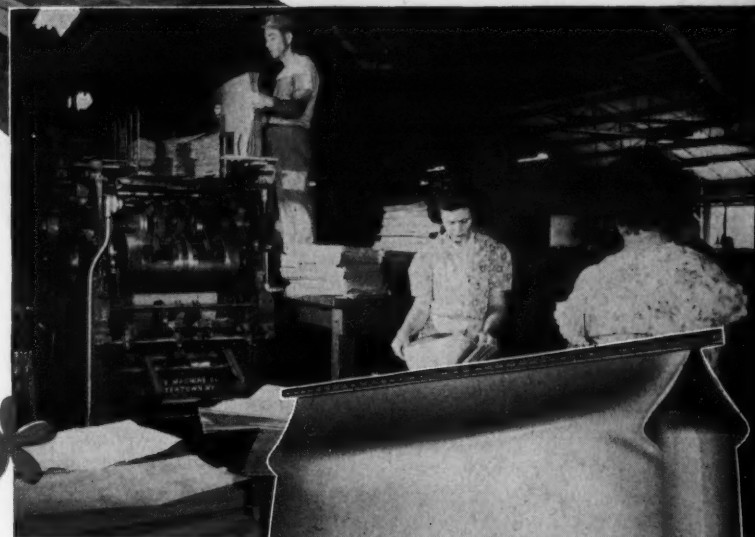
Source: Traveloader trucks in 4,000, 10,000 and 30,000 lb models are built by Lull Mfg. Co., Dept. CP, 3612 East 44th St., Minneapolis, Minn. . . or for more information check CP 5043 on handy form, pages 2 & 3.



FULTON MULTIWALLS



must
be
good *



*must be good . . . because of the ever increasing number of users favoring us with larger and larger orders for Fulton Multiwall Paper Bags.

*must be good . . . because constant vigilance and inspection insure good workmanship, and uniform high quality which have won many new friends, and are winning more. In any size — all types, pasted or sewn bottom, open mouth or valve — Fulton makes "YOUR STYLE MULTIWALL." Call on Fulton for your next order of Multiwalls.

Fulton BAG & COTTON MILLS

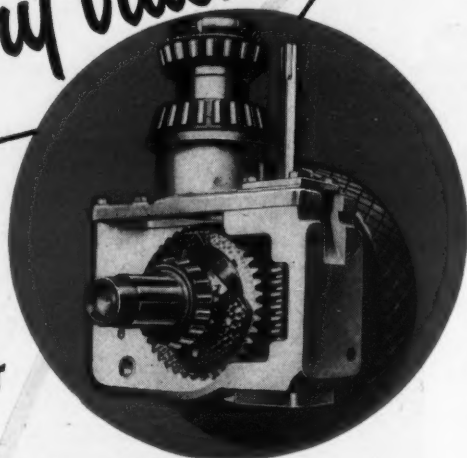
Atlanta • St. Louis • Dallas • Kansas City, Kans. • Denver • Minneapolis • New Orleans • Los Angeles • New York, 347 Madison Av

When inquiring check CP 5044 on handy form, pgs. 2-3



**\$4500⁰⁰ Saved
on every truck!**

**...because
its life
is 400% longer**



report Stuebing Hydroelectric owners.

One Stuebing Hydroelectric stays on the job as long as four "expendable" type trucks, report satisfied fleet owners.

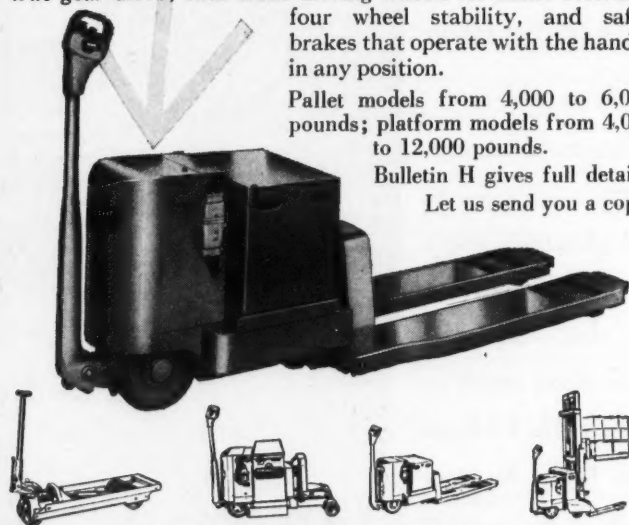
Why? The cutaway view of the Hydroelectric's drive, above, shows you why. It's built like the drive in your car with alloy-steel gears and Timken bearings, sealed in lubricant for the long, long life of the truck. That's typical of the long, lasting construction throughout the Stuebing Hydroelectric.

Only the Stuebing Hydroelectric gives you all these features—true gear drive; twin front driving wheels for easier steering; four wheel stability, and safer brakes that operate with the handle in any position.

Pallet models from 4,000 to 6,000 pounds; platform models from 4,000 to 12,000 pounds.

Bulletin H gives full details.

Let us send you a copy.



1071 Standard Models Available.

Lift Trucks Incorporated

2425 Spring Grove Avenue Cincinnati 14, Ohio

When inquiring check CP 5045 on handy form, pgs. 2-3

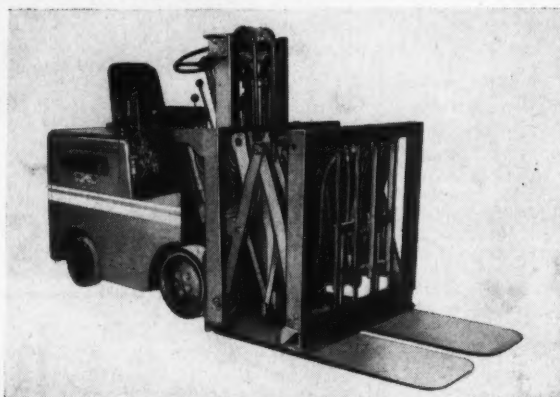
MATERIAL HANDLING

**Announces availability of
'puller', 'pusher' units
on 2000-lb fork trucks . . .**

devices were formerly available on trucks of 3000 to 5000-pound capacity only

Uses: "Pul-Pac" and "Pusher" devices are now available for maker's 2000-pound capacity Clipper lift trucks, both gas and electric models.

Features: Pul-Pac device makes it possible to handle unit loads by pulling them onto, or pushing them off



Fork truck accessory

load-carry plates. Especially advantageous where relatively inexpensive carrier sheets rather than conventional pallets are used.

Pusher device, similar to the Pul-Pac excepting for the gripping mechanism and carrying plate, is used for unloading operations only. Unit loads can be unloaded directly from the forks or from conventional pallets whenever rehandling as a unit is not required.

Description: These devices were formerly available for maker's 3000 to 5000-pound "Carloader" fork trucks only.

Source: Announced by Clark Equipment Company, Industrial Truck Division, Dept. CP, Battle Creek, Mich. . . . or for more information check CP 5046 on handy form, pages 2 and 3.

No ductwork required for crane cab cooler . . .

cooling section goes in cab, condenser unit outside on convenient place on crane

Uses: Air conditioning the cabs of cranes operating in high temperatures or in atmospheres contaminated by toxic and noxious gases or dusts. Typical applications include cranes working over and around soaking pits, open hearth furnaces, bessemer converters, stripping operations and blast furnaces.

Features: No ductwork is needed for installation. Cooling section is installed in cab itself, and the larger condenser section is placed outside on the crane in any convenient location. Reports are that unit can be installed easily and quickly on any type of crane, or in control pulpits, with minimum of down-time.

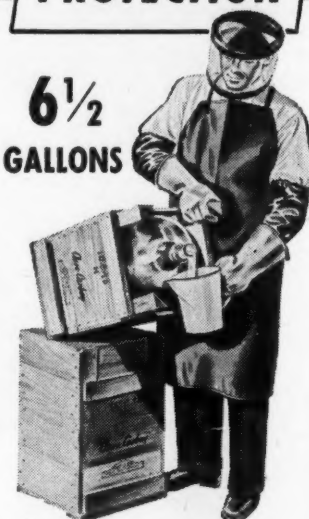
Description: Like other cab coolers made by manufacturer, the "Split-Type Crane Cab Cooler" provides constant, year-round ventilation, filters the air to remove dust, dirt and fumes, cools air in summer and, if necessary, heats air in winter. Cooling section is housed in

HERCULES

CARBOY BOXES

**give you
EXTRA
PROTECTION**

**6½
GALLONS**



Completely enclosed wooden carboy box complying with I.C.C. I-D regulations for transporting mineral acids. Convenient corner posts allow one man to handle carboy and flat top provides for compact storage. Designed with interchangeable cork (Hercules) or rubber cushion (Aero) inserts and cushions.

SPECIFICATIONS

BOX SIZE: 13¾" x 13¾" x 22" including hood (I.D.)

WEIGHT: Approx. 26 lbs. (Box)
Approx. 14 lbs. (Bottle)

CARBOY: 6½ gals. normal capacity (7 gals. overflow)

**COMPLIES WITH CLASSIFICATION
I.C.C. I-D.**

**PROMPT
DELIVERY**

Carboys also supplied in 13 gal., 5 gal. and other capacities.

**NATIONAL
BOX & LUMBER COMPANY**
NEWARK 5, NEW JERSEY



When inquiring check CP 5047 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

aluminum finish cabinet, and there is ample room in most crane cabs for it. Section is connected to outside condenser section by power lines and refrigerant piping. Thermostatically controlled, the cooler will maintain a temperature of 80 to 85°F when outside temperature is 175°F. During heating cycle, unit keeps temperature of 68 to 75°F in the cab when outside temperature is zero.

Source: Developed by Air Conditioning Department, Dravo Corporation, Dept. CP, Fifth and Liberty Avenues, Pittsburgh 22, Pa. . . or for more information check CP 5048 on handy form, pages 2 and 3.

Orderly flow of materials assured by moving dollies, hand trucks with subfloor conveyor . . .

system eliminates overhead obstructions; is based on use of a predetermined conveyor path

Uses: For moving tow-pin equipped dollies or hand trucks over predetermined paths.

Features: Method assures an orderly flow of materials and eliminates confusion and congestion. There are no overhead structures to obstruct operations.

Description: Motive power is furnished to dollies or hand trucks by a conveyor chain equipped with ball bearing trolleys running in a track just beneath floor



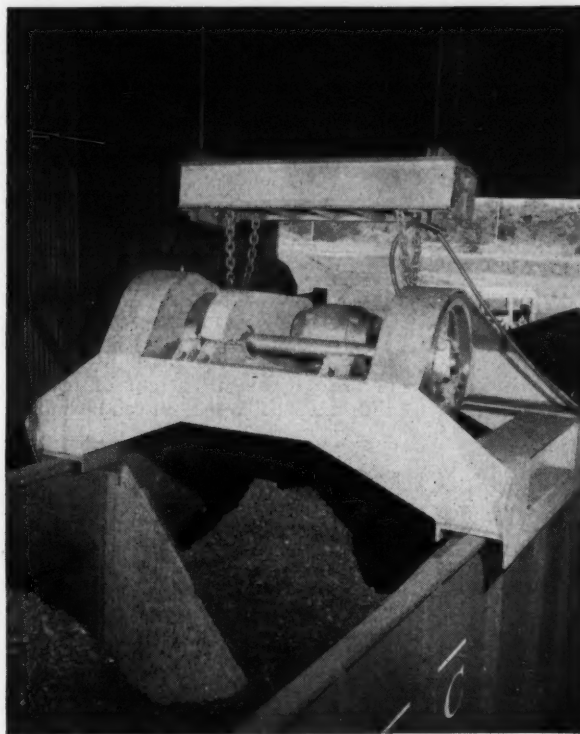
Hand trucks are spaced at will on subfloor conveyor system level and protected by cover plates at floor level. Tracks are easily installed when floor concrete is being poured. Dollies or trucks may be loaded and engaged or disengaged and unloaded at any point along the conveyor line. Floor plates have a 1" slot to allow tow-pins to enter and engage the pusher trolleys. Dollies or trucks can be spaced at will. Disengagement is accomplished by merely lifting tow-pin out of the slot.

If, while travelling, a dolly meets a surface obstruction, a safety release automatically disengages it from its pusher trolley in order to prevent damage or injury to personnel.

Conveyor chain is driven by one or more drive units, depending upon the length of conveyor and its total live load.

Source: Mechanical Handling Systems, Inc., Dept. CP, 4600 Nancy St., Detroit 2, Mich. . . or for more information check CP 5049 on handy form, pages 2 and 3.

LINK-BELT Car Shakers and Rotary Dumpers empty railroad cars faster... ...more gently...at lower cost



IT'S EASIER ON CARS . . . thanks to exclusive low-frequency vibration. And the Link-Belt Car Shaker also has a much lower noise level. Positive action gets most hopper bottom cars "broom-clean" in a few minutes. Especially good for damp, sticky materials. Write for Book 2345.



UNLOADS GONDOLAS IN 90 SECONDS or less (including return to upright position)! Simple, automatic, fool-proof—Link-Belt Rotary Car Dumper can be operated by unskilled labor. Takes all types of open top cars . . . up to 90-ton capacity.

Get an unbiased recommendation for the right type of car unloader for your needs

Whether you empty a few gondola cars a day or hundreds—Link-Belt has equipment designed to do the job with maximum efficiency. Shortages of manpower, demands for ever-increasing production—both emphasize the necessity for mechanized, push-button car unloading.

Link-Belt's low-frequency Car Shaker meets the needs of smaller users. While for larger

operations, Link-Belt's automatic Rotary Car Dumper offers tremendous capacity. Both are engineered by the leader in materials handling . . . each does a better, more economical job, faster, for your particular requirements.

LINK-BELT
CAR SHAKERS and ROTARY DUMPERS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 3, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa).
Offices in principal cities. 12,320

When inquiring check CP 5050 on handy form, pgs. 2-3

DRESS UP!



with Bemis Printed Multiwalls

Bemis printing is bright, colorful, crisp. If you have an intricate, multi-color job, that is our special dish. Such printing can come only from the modern equipment and the long experience and skill in designing, plate-making and printing that Bemis provides. Ask your Bemis man.

Bemis



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New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Philadelphia • Phoenix
Pittsburgh • St. Louis • Salina • Salt Lake City • Seattle • Wichita

When inquiring check CP 5051 on handy form, pgs. 2-3

MATERIAL HANDLING

More than 70 types, sizes of ball bearings shown

Twelve-page catalog on miniature ball bearings contains complete specs for over 70 types and sizes. Contents include application photographs. Catalog 51b is issued by Miniature Precision Bearings, Inc., Dept. CP, Keene, N. H. When inquiring specify CP 5052 on handy form, pages 2 and 3.

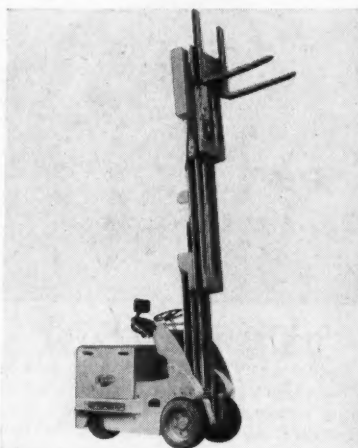
Attach lift extender, tier loads to ceiling of storage area . . .

unit attaches to any of builder's standard fork trucks

Uses: Adds more than 5' to fork truck's maximum lift.

Features: Has its own pressure ram, pump, and motor, and is operated by a single push button.

Description: Auxiliary lift does not add to overall height of truck with masts collapsed. It can be built



Lift extender on 4000-lb truck

in a number of sizes, the largest adding 62" extra lift. Device is for maker's standard fork trucks only.

Source: Automatic Transportation Company, Dept. CP, 149 West 87th St., Chicago, Ill. . . . or for more information check CP 5053 on handy form, pages 2 and 3.

No horizontals required with shelf supports

Two-page bulletin details shelf supports for use with maker's metal framing. Their use eliminates horizontal framing members and reduces erection time. Bulletin UC-1 is issued by Unistrut Products Co., Dept. CP, 1013 W. Washington Blvd., Chicago 7, Ill. When inquiring specify CP 5054 on handy form, pages 2 and 3.

New chemical-resisting linings for drums



No longer need your choice in drums be limited to an ordinary steel drum with the usual protective lining or to one of more costly metals. Now you can have an in-between choice: An ordinary steel drum with the extraordinary protection of Unichrome Series 4000 Drum Lining.

These drum linings were developed to handle many chemicals beyond the ability of conventional linings. They're heavy duty—resist most acids, alkalies, alcohols, salt solutions, and others. They build up thick films. They're flexible. They can take numerous round trips without damage. And your cost is far less than for the scarce alloy metal containers. Ask your supplier if he is prepared to line your drums with plastisol Unichrome Series 4000 Drum Linings.



COATINGS FOR METALS

Products of UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 5055 on handy form, pgs. 2-3

HAMMOND Screw-Lifts

in WATER FILTRATION PLANT
Elevating HYDRATED LIME
and ALUM TO SCALE HOPPERS



Here is another unique Screw-Lift installation, which no other means of conveying could accomplish . . . that of handling a powdered substance from one floor to another—and discharging into scale hoppers for exact feeding into drinking water. Hydrated lime with alum as an alternate are dumped into hoppers on floor below, whence the Screw-Lift elevates the material to the scale hoppers on floor above. Efficiency, cleanliness and absence of dusting were prime considerations, plus the saving of space and practically no hand labor. You too may have a bulk material handling problem which Screw-Lift will solve. Capacities from 75 to 2500 cu. ft. per hour. Drives to suit your layout.

This lift is 22' 7 1/2" high. Feeder on floor below is 4' long.

Write for Form No. M-500-2. No obligation incurred.



When inquiring check CP 5056 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Restrictions on steel strap prompt development of fiber replacement . . .

has soft, smooth surface; retains tensile strength and ductility under normal conditions

Uses: As a replacement for restricted steel strapping on packages weighing less than 90 lb and in other packing and shipping applications.

Features: Extremely tough and withstands a pull of 275 lb. It retains its original strength and ductility under normal conditions, and provides uniform tension sometimes lacking in non-metallic strapping. It has a soft, smooth surface that is non-abrasive and non-ad-



Fiber strap applied with regular binder tool

hesive. Its uniform, reinforcing tensioning with binder tool makes an adhesive surface unnecessary.

Description: Strap is produced in standard $\frac{3}{4}$ " width, .040" thick. It is available in 25 lb coils, 1750' long.

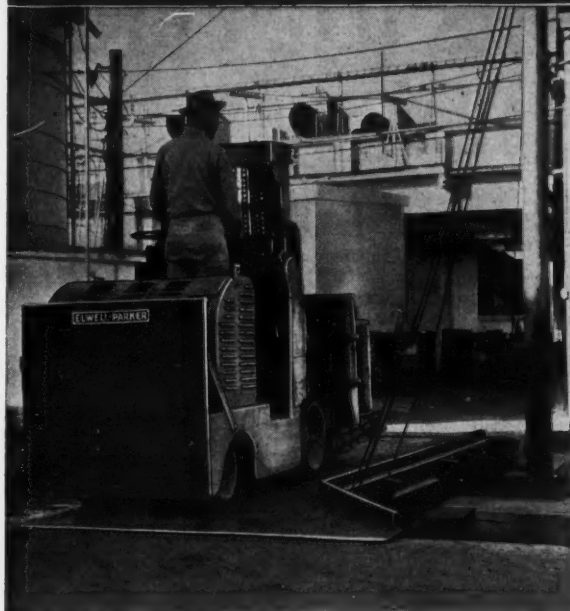
Source: "Fiberstrap" is a development of A. J. Gerrard & Co., Dept. CP, 1950 North Hawthorne Ave., Melrose Park, Ill. . . . or for more information check CP 5057 on handy form, pages 2 and 3.

Outlines modern methods of material handling

Material handling is the general topic of 248-page book. After introducing the subject and explaining its value, books presents modern methods in the aircraft, automotive, building material, drug and chemical, electrical, foundry, glass, leather, metal products, oil and paint, paper, printing and publishing, railroad, textiles, tire and rubber, and warehousing fields. Contents consist of case histories, thoroughly illustrated.

Book measures about 8 x 11". To obtain "Modern Methods of Materials Handling", remit \$5.50 direct to The Material Handling Institute, Inc., Dept. CP, 731-732 DuPont Circle Bldg., Washington 6, D.C. When inquiring specify CP 5058 on handy form, pages 2 and 3.

ELWELL-PARKER CASE HISTORY IN THE CHEMICAL INDUSTRY



Truck carries a load of chemicals across drawbridge and into plant.



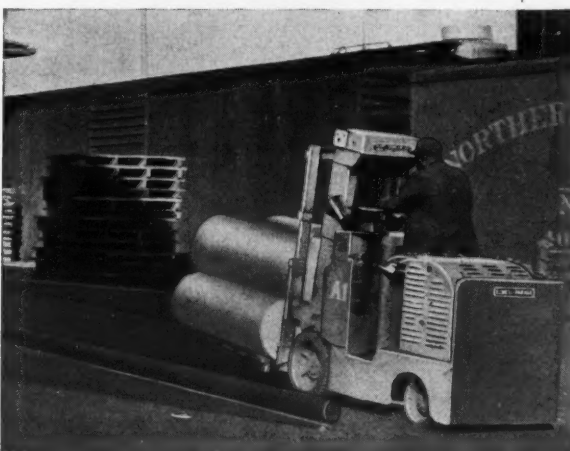
Truck stores 54 palletized rolls in space previously occupied by 15—a 250% improvement!

Carloading cut from 28 to 1.3 man-hours

Power Trucks also increase use of storage space 250% for prominent Textile Finisher

WHAT TRUCKS DO

Primary jobs are transporting chemicals, starches, dyes, paper and finished cloth. 8 to 10 million yards of cloth are handled monthly.



Five 800 lb. rolls being carried up ramp to boxcar. Previously 8 men with hand trucks took $3\frac{1}{2}$ hours to load car; now truck operator and 1 helper do job in 40 minutes—only 5% of previous man-hours.

Trucks have strenuous schedule—24 hours per day in 3 eight-hour shifts. Trucks are also kept busy over week ends by engineering department for maintenance and repair work on machinery.

ALL ONE MAKE OF TRUCKS

First Elwell-Parker was bought four years ago and extensively job-tested. It proved so satisfactory over former trucks that only Elwell-Parkers have been acquired since.

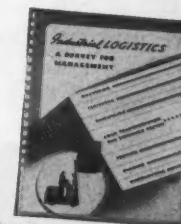
OPERATORS ENTHUSIASTIC

Competition is so keen for a truck job, that to become eligible 5 years' employment is now necessary. Each driver is responsible for the condition of his truck—the one having the lowest maintenance costs gets the newest equipment. Drivers who have an accident are temporarily "grounded."

FREE BULLETIN on Scientific Materials Handling

Ask for "Industrial Logistics" and describe materials to be handled. Write The Elwell-Parker Electric Co., 4015 St. Clair Ave., Cleveland 3, Ohio.

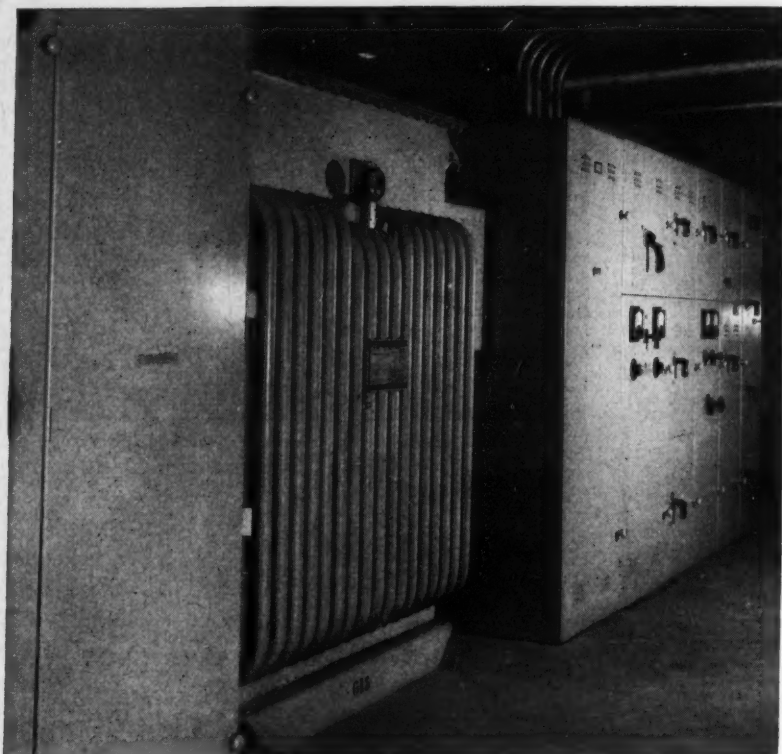
ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893



When inquiring check CP 5059 on handy form, pgs. 2-3

Milwaukee Plant gets D.C. Power

AT \$5,000 ANNUAL SAVING



More than two years of trouble-free 24-hour-a-day operation have proved the advantages of the G-E Ignitron Rectifier installed at the Milwaukee Lace Paper Company.

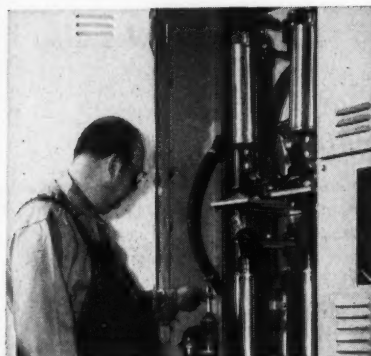
Compared with the old steam-driven generators previously used, the G-E Ignitron Rectifier shows a saving in operating cost of \$5,000 annually. Stationary engineers are no longer necessary in the company's production of d-c power, can now attend to other plant operations. The G-E Ignitron Rectifier operates 24 hours a day, 7 days a week, with minimum attention. In addition, it gives a steadier, constant voltage over the entire load range, and higher short-time overload capacity.

Supplied as a complete packaged unit with transformer and metal-enclosed switchgear, the installation occupies minimum space.

Call or write your nearest G-E sales office for information on a G-E Ignitron Rectifier to fit your d-c power needs. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



IGNITRON RECTIFIER



This photograph shows the simple, compact design of the G-E Ignitron Rectifier. No major moving parts to wear out or require attention. No vacuum pump is required. Result is the lowest possible operating cost for producing d-c power.

GENERAL  **ELECTRIC**

When inquiring check CP 5060 on handy form, pgs. 2-3

New

Practical book on hydrazine covers chemistry and uses

Practical treatment of hydrazine (a potentially useful hydronitrogen) is contained in 244-page book written by Audieth and Ogg. Briefly, book considers its important characteristics, reducing properties, inorganic compounds, and applications.

Book begins with discussion of the relationship of hydrazine to some of the other hydronitrogens and its consideration as an ammonio derivative. Methods of formation and preparation of hydrazine are then given, followed by summarization of known methods and procedures for preparing concentrated and anhydrous hydrazine. Physical and thermochemical properties, explosive characteristics, and gaseous decomposition are described in detail. General chemical properties and physiological effects of aqueous solutions are then presented.

Oxidation and catalytic decomposition are followed by a reference list of all known reactions involving use of hydrazine as a reducing agent. Both qualitative and quantitative identification and determination are treated thoroughly, and 2 chapters are devoted to properties of the simple and double salts of hydrazine and its coordination compounds. Anhydrous hydrazine is treated as parent substance of system of acids, bases, and salts.

Final chapter surveys both actual and potential uses of hydrazine. Book is, of course, thoroughly referenced and indexed. To obtain "The Chemistry of Hydrazine" remit \$5 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 5061 on handy form, pages 2 and 3.

Instruments test resistivity of ground and soil

Two-page data sheet shows features, construction, ranges, and uses for two soil and ground resistivity testing instruments. One is lightweight, and used for soil only; other is used for circuit resistance and polarization effects as well. Data Sheet 26-43 is issued by Associated Research, Incorporated, Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. When inquiring specify CP 5062 on handy form, pages 2 and 3.

Military, other specifications included in steel data book

Wide range of sizes and analyses of aircraft steels available for shipment from stock are presented in 68-page booklet. Added feature is inclusion of Military (MIL) Aeronautical, Air Force-Navy (AN), Federal (QQ), and Aeronautical Material (AM) Specifications pertaining to steel. "Aircraft Steels" is issued by Joseph T. Ryerson & Son, Inc., Dept. CP, Box 8000-A, Chicago 80, Ill. When inquiring specify CP 5063 on handy form, pages 2 and 3.

Presents aminoplastics

Aminoplastics is the subject of 250-page book. After a short account of chemistry and formation of urea-formaldehyde, melamine, and allied resins, author C. P. Vale describes use of molding powders, properties and testing

CHEMICAL PROCESSING

Literature

of moldings, and use of aminoplastics for lacquers, adhesives, textiles, paper, and other special purposes. To obtain "Aminoplastics" remit \$2.75 direct to Interscience Publishers, Inc., Dept. CP, 250 Fifth Ave., New York 1, N. Y. When inquiring specify CP 5064 on handy form, pages 2 and 3.

Investigates weldability of copper-base alloys

Eighteen-page form presents a general investigation into the weldability of several copper-base alloys with a recently developed inert-gas-shielded metal-arc process. Mechanical properties of several simple welded joints with a number of electrode-filler metals are included along with various practical applications. Form is illustrated with 45 application and specimen photographs and charts. Text is further supplemented by 11 tables of test and specification data.

Form ADR 69 is issued by Air Reduction Sales Company, a division of Air Reduction Company, Inc., Dept. CP, 60 E. 42nd St., New York 17, N. Y. When inquiring specify CP 5065 on handy form, pages 2 and 3.

Presents temp controller for any heating unit

Instrument for measuring and controlling temperature on any type of heating equipment is described, illustrated, and specified in 4-page bulletin. Design, measuring circuit, and control system are fully covered. Bulletin 292-1 is issued by Wheelco Instruments Company, Dept. CP, 847 W. Harrison St., Chicago 7, Ill. When inquiring specify CP 5066 on handy form, pages 2 and 3.

Suggests industrial uses for fission products

Properties, availability, cost, and possible industrial uses of fission products are the principal subjects covered by interesting prospectus. Chief capabilities of these radioactive atoms that might be of interest to industry include the ability to kill organisms, induce chemical reactions, ionize gases, activate phosphors, and produce rays which can penetrate solids. In addition, prospectus considers anticipated problems such as those connected with health and safety, handling and shipping, patent and process protection, and disposal of radioactive wastes.

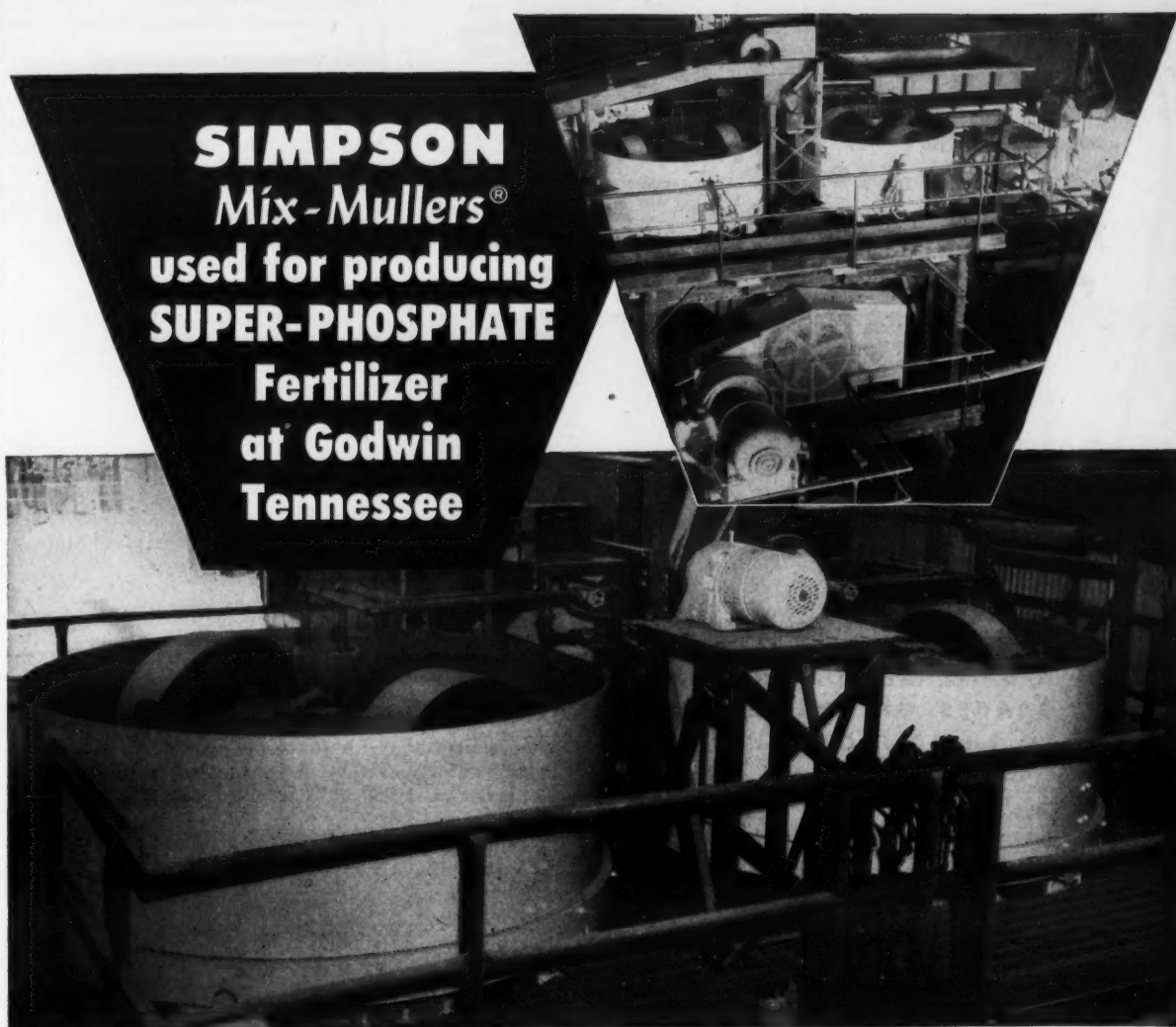
"Industrial Utilization of Fission Products — A Prospectus for Management" is issued by Project 361, Dept. of Business and Industrial Economics, Stanford Research Institute, Dept. CP, Stanford, Calif. When inquiring specify CP 5067 on handy form, pages 2 and 3.

Continuously measures, controls viscosity

Twelve-page, 2-color catalog presents instruments for continuous viscosity measurement and control. Differential pressure regulator incorporated in unit provides constant meter sample flow rate regardless of line fluctuations. Catalog 88 is issued by Fischer & Porter Company, Dept. CP, 4030 County Line Road, Hatboro, Pa. When inquiring specify CP 5068 on handy form, pages 2 and 3.

JUNE, 1951

SIMPSON Mix-Millers® used for producing SUPER-PHOSPHATE Fertilizer at Godwin Tennessee



ILLUSTRATED here are two views of the Simpson *Mix-Millers* installed in the briquetting unit at the Godwin, Tennessee, fertilizer plant operated by the TVA.

These two *Mix-Millers* are used for accurate, controlled mixing of Super-Phosphate fertilizer. They are arranged for automatic operation through the use of overhead conveyors, solenoid valves for liquid additions, and positive, centralized control through a National "Timemaster" automatic control unit.

This is just one example of the way in which Simpson *Mix-Millers* are being used to solve all types of mixing problems throughout the chemical process industries. For further details, send for your copy of our latest Bulletin 450.

Use Our Free Laboratory Service

We have a completely equipped modern testing laboratory for determining the results of mixing different products in Simpson *Mix-Millers*. A confidential test in our laboratory will prove what a Simpson can do for you. Write for details.



SIMPSON Mix-Muller® Division

NATIONAL ENGINEERING CO., 624 Machinery Hall Bldg., Chicago 6, Ill.

Manufacturers and Selling Agents for Continental European Countries—George Fischer Limited, Schaffhausen, Switzerland. For the British Possessions, Excluding Canada and Australia—August's Limited, Halifax, England. For Canada—Dominion Engineering Co., Ltd., Montreal, Canada. For Australia and New Zealand—Gibson, Battle & Co., Pty., Ltd., Sydney, Australia.



When inquiring check CP 5069 on handy form, pgs. 2-3

EIGHT ROPER 3600 SERIES PUMPS INCREASE PRODUCTIVITY FOR THE GLIDDEN CO.



A BANK OF ROPERS TRANSFERS VARIOUS GRADES OF VARNISH FROM BASEMENT TO THIRD FLOOR...

The use of remotely-operated Roper Series 3600 Pumps at The Glidden Co., St. Louis, is not an unusual pumping application. However, it is well to note that various grades of heavy varnish are pumped from basement to the third floor mixing room; each pump serving a specific outlet for the type of varnish required for different finishing materials.

Roper Series 3600 Pumps are valuable factors in varied installations — whether thick or thin liquids are to be pumped. Component parts are of the highest quality, and design permits simplest operation coupled with high efficiency. Capacities of 40, 50, 70, 90, and 100 g.p.m. at 60 lbs. p.s.i. are available. Get all the facts on Roper Series 3600 Pumps... see how well they fit into your production plans.



ROPER
Rotary Pumps

GEO. D. ROPER CORP.
746 Blackhawk Park Ave.
ROCKFORD, ILLINOIS

NEW LITERATURE

Wide characteristics range for fibrous materials

Information on a group of fibrous sheet materials which blanket the range of characteristics from laminated plastics to paperboards is contained in 20-page loose leaf folder. Descriptive sheets cover 8 materials; each sheet describes one, and lists physical characteristics, electrical or chemical characteristics, test values, color, gauges, and special applications. Typical uses are pictured on the back of each sheet.

Data covers Duroid 100, for deep-drawn shapes; Duroid 200, a formable electrical grade; Duroid 300, with high wet strength; Duroid 400, with fold resistance flexibility; Duroid 600, which retains its dimensional stability during and after immersion in water; Duroid 700, with high arc resistance; Duroid 800, for flat insulating parts; and Duroid 900, a gasket material for sealing highly machined surfaces.

"Duroids" is issued by Rogers Corporation, Dept. CP, Manchester, Conn. When inquiring specify CP 5071 on handy form, pages 2 and 3.

Presents gears and pinions for transportation uses

Eight-page, 2-color bulletin presents gears and pinions for transportation equipment. Items are illustrated. GEA-1054B is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 5072 on handy form, pages 2 and 3.

Lowered surface tension makes water "wetter"

Small 8-page brochure presents a simple description of industrial applications for water with low surface tension, and details system for making an economic supply available without elaborate equipment. "Wet" water has about 30 dynes surface tension; normal water has about 72 dynes. Primary characteristic of wet water is that it will penetrate or stick to whatever it touches, thus making it especially suited for dust control, product blending, wetting, washing, fire fighting, and similar applications.

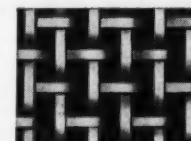
System consists of one or two chemical capsules in a lucite barrel; normal water runs in, is converted to wet water, and can then be used. There are no pumps, motors, or storage tanks required. Further details are contained in "Wet Water", issued by Aquadyne Corporation, Dept. CP, 220 E. 42nd St., New York 17, N. Y. When inquiring specify CP 5073 on handy form, pages 2 and 3.

Roofing problems considered in illustrated brochure

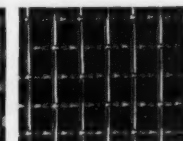
Authoritative discussion of roofing problems is contained in 32-page brochure. Illustrated by photographs, drawings, and diagrams, brochure explores such subjects as various types of roofs, how they are built, what factors enter into their deterioration, and how roof troubles can be diagnosed and treated. Information was obtained from lab reports and actual field experience.

Brochure is divided into 15 sections, with contents tabulated. Typical headings — "Laying the Built-Up Roof", "Repair of Copings and Parapets", "Area Treatment of

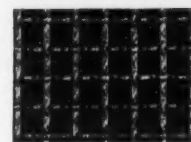
9 REASONS for specifying Cambridge Industrial Wire Cloth



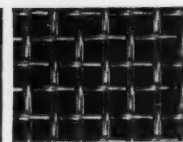
1. Flat Wire Mesh



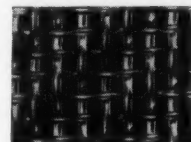
2. Single Intermediate Crimp



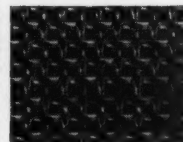
3. Double Intermediate Crimp



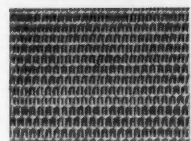
4. Double Crimped



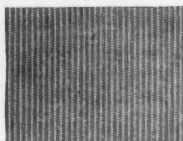
5. Twilled Weave



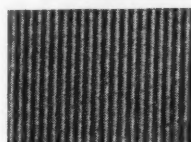
6. Calendered Backing Screen



7. Oblong Mesh



8. Plain Dutch Filter Cloth



9. Twilled Dutch Filter Cloth

● **SELECT THE WIRE CLOTH** that meets your requirements best from these 9 basic Cambridge weaves. Each is available to you in any metal or alloy wire of any gauge. Mesh sizes range

from 4" openings to 20 x 250 mesh, according to your needs. Many types of Cambridge wire cloth are ready for immediate shipment.

Close attention to each loom by individual operators during weaving is your assurance of exact mesh count. Each finished piece is carefully inspected before shipment to make certain it is free from defects.

TELL US your special problem in filtration, screening or sizing. Perhaps our facilities and experience can be combined to produce the special type of wire cloth needed.

FREE WIRE CLOTH HANDBOOK! 73 pages of specifications, metallurgical data and descriptions of industrial wire cloth. WRITE TODAY for your copy of this valuable reference book.



The Cambridge Wire Cloth Co.
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WIRE CLOTH METAL CONVEYOR BELTS SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES
See "Wire Cloth" in your Classified Telephone Directory.

When inquiring check CP 5074 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Roofs". "Solving Roof Problems" is issued by The Tremco Manufacturing Company, Dept. CP, 8701 Kinsman Rd., Cleveland, O. When inquiring specify CP 5075 on handy form, pages 2 and 3.

Artificial staple fiber described in bulletin

Eight-page bulletin describes an artificial staple fiber made of vinyl chloride-acrylonitrile copolymer resin. Bulletin is in 2 sections; first deals with physical and chemical properties of this fiber, and second discusses these properties in terms of their value in fabrics. Properties covered include tenacity; elongation; stiffness; toughness; flammability; moisture regain; resistance to water, chemicals, insects, and mildew; and light stability.

Information on standard sizes and lengths is also included. "Dynel" is issued by Union Carbide and Carbon Corporation, Carbide and Carbon Chemicals Company, Dept. CP, Room 308, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 5076 on handy form, pages 2 and 3.

Series of six booklets discusses monomers

Collection of data and procedures on basic materials for the synthesis of fibers, plastics, and rubbers is contained in series of 6 booklets on monomers. Individual booklets cover acrylic acid; esters of acrylic acid; esters of methacrylic acid other than methyl methacrylate; n-vinyl-carbazole; vinyl ethers; and vinylpyridine. Each booklet has an extensive bibliography, and should be valuable to those doing research in this field.

Booklets are not available individually. To obtain "Monomers, Section II" remit \$5 direct to Interscience Publishers, Inc., Dept. CP, 250 Fifth Ave., New York 1, N. Y. When inquiring specify CP 5077 on handy form, pages 2 and 3.

Presents 3 test instruments for insulation, circuits

Eight-page bulletin presents 3 test instruments, two for testing insulation and the third for testing circuits. All are described and illustrated. Bulletin 21-85-65 is issued by James G. Biddle Co., Dept. CP, 1316 Arch St., Philadelphia 7, Pa. When inquiring specify CP 5078 on handy form, pages 2 and 3.

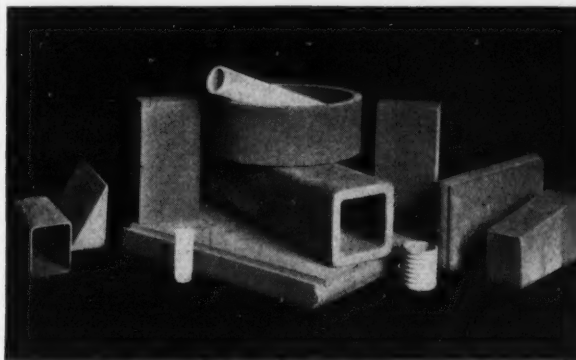
Shows analytical balances

Eight-page folder presents essential data on 7 models of analytical balances. Following types are included: knife-edge balance with capacity of 200 g, sensitivity of 0.1 mg; knife-edge balance with capacity of 50 g, sensitivity of 0.5 mg; specific gravity balance giving densities to 4 decimals; hydrostatic balance with capacity of 500 g, sensitivity of 30 mg; knife-edge balances with capacities from 100 to 10,000 g, sensitivities from 2 to 100 mg respectively; simple knife-edge balances with capacities from 25 to 1000 g, sensitivities from 10 to 50 mg respectively; and a radical all-metal balance with capacity of 1000 g, sensitivity of 10 mg.

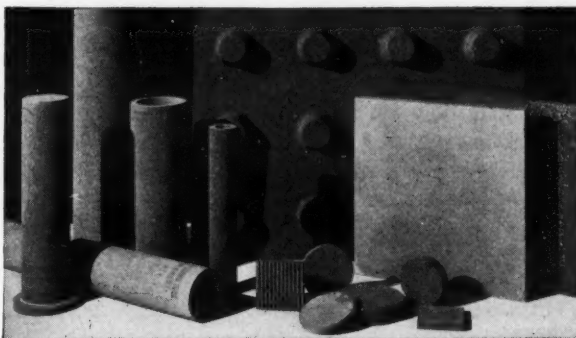
Further details and illustrations are given in "Reyers Balances" folder, issued by Livingston Commercial Corp., Dept. CP, 230 Park Ave., New York 17, N. Y. When inquiring specify CP 5079 on handy form, pages 2 and 3.

JUNE, 1951

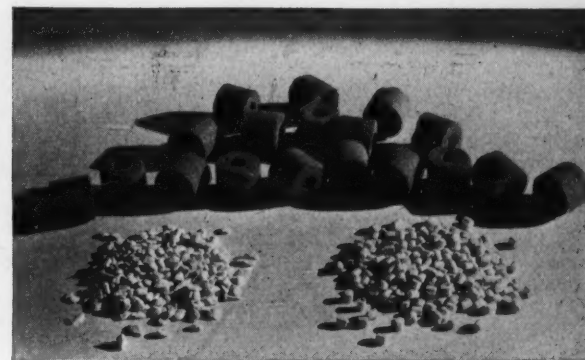
Chemical Stability Contributes to Wider Usage of Fused Alumina



REFRACTORY SHAPES, made of Norton Alundum* mixtures containing 86% to 99.3% fused alumina, resist oxidation in reducing atmospheres at temperatures up to 3450° F. Also highly resistant to chemical attack and mechanical erosion. Write for Bulletin 803.



POROUS PLATES AND TUBES made of Norton Alundum grain fired to at least cone 12, are unaffected by acid, neutral and slightly alkaline liquors. They combine uniform permeability with great strength. Write for Bulletin 140.



CATALYST SUPPORTS, made of Norton Alundum mixtures containing 77% to 89% alumina, are highly refractory, chemically inert and extremely durable. Controlled porosity provides wide range of permeabilities and surface areas. Write for experimental samples.



LABORATORY WARE, made of highly refractory Norton Alundum mixtures containing at least 85% fused alumina (up to 99% in special mixtures), is not attacked by any organic solvent. Write for Bulletin 793.

Investigate! Maybe Norton Alundum shapes can improve your commercial or laboratory processes. The experience of Norton, pioneers in controlling the chemical and physical variables of fused alumina, is at your disposal. Contact your nearby Norton representative or write direct.

NORTON COMPANY, 564 NEW BOND ST., WORCESTER 6, MASS.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries



Making better products to make other products better

Special REFRACTORIES

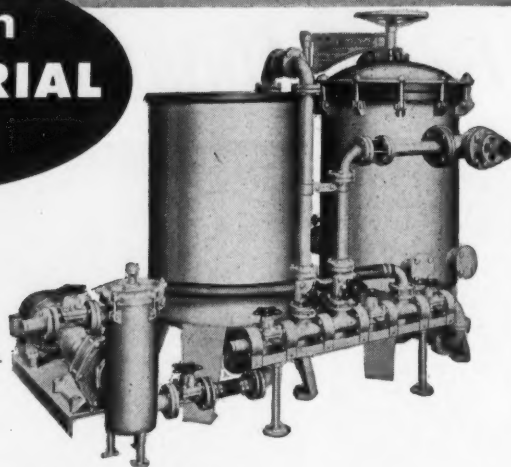
Canadian Representative
A. P. GREEN FIRE BRICK CO., LTD. TORONTO, ONTARIO

When inquiring check CP 5080 on handy form, pgs. 2-3

Solution Clarification? Any Solution-Any Quantity

use an
**INDUSTRIAL
Filter**

100 to 15,000 gallons per hour.
Portable and stationary models.
Standard or special filtration
systems engineered to meet
unusual requirements.



You save many ways . . .

Here's how Industrial filters keep down filtration costs—The flow rates of Industrial filters are based on the solutions involved. You know the capacity you get. With Industrial you get an adequate filter with slurry tank, motor driven pump, valves and fittings in a complete package with one, undivided, experienced responsibility—with space requirements at a minimum.

The labor, down time, and the inconveniences of cleaning, replacing the filter media, and reassembling the filter for every new filter cycle—all are eliminated by the Industrial Air-Wash Cleaning Method available for all models. It is necessary to remove the cover only when new filter cloths are installed.

The engineering, design, and construction of Industrial filters have proved out in long service and low maintenance costs. Industrial has the experience and is large enough to handle your filter requirements. Since 1927 filters and filtration systems have been an important part of our business.

**INDUSTRIAL
Water
Demineralizers**

for Chemically pure water at
a few cents per 1000 gallons.

Write for full information
and recommendations

INDUSTRIAL FILTER & PUMP MFG. CO.

5908 W. Ogden Ave.
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A Two-Bed INDUSTRIAL Water Demineralizer.
Standard two-and four-bed units available with
capacities of 200 to 1000 gph. Special units of any
capacity engineered to requirements.

FILTERS	PUMPS	CORROSION TESTING APPARATUS
Pressure Type	Centrifugal	Salt Fog • Humidity
RUBBER DIVISION		
Vulcanized Linings	Molded Products	WATER DEMINERALIZERS

When inquiring check CP 5081 on handy form, pgs. 2-3

NEW LITERATURE

Presents extensive variety of stainless steel items

Wide range of stainless steel products is detailed in 64-page catalog. Items include balls, bars, bolts, brushes, chain, clamps, wire cloth, petcocks and stopcocks, faucets, various fittings and flanges, floats, liquid gauges, sight flow glasses, handles, hinges, Woodruff keys, nails, nuts, pins, pipe, pumps, rivets, wire rope, a great variety of screws, sponges, staples, strainers, tools, tubing, turn-buckles, heating units, several valves, and washers. Items are thoroughly illustrated, specified, and described; index is quite complete.

General information is also given on wire gauges, corrosion, stainless steel type numbers and analyses, and weights of wire. Catalog 52 is issued by Schnitzer Alloy Products Co., Dept. CP, 325 Pine St., Elizabeth 1, N. J. When inquiring specify CP 5082 on handy form, pages 2 and 3.

Packaging Institute activities detailed in brochure

Listing all institute activities, 24-page brochure is issued by Packaging Institute, Inc., Dept. CP, 342 Madison Ave., New York 17, N. Y. When inquiring specify CP 5083 on handy form, pages 2 and 3.

How to run a lathe is told in well-illustrated book

Lathe operation is the topic of 8 x 5 1/4", 128-page book. Text covers such items as correct installation and leveling of the lathe; grinding cutter bits; turning, boring, thread cutting, taper turning, drilling, reaming, and tapping; machinability ratings and cutting speeds for various steels; standard tolerances for press fits, running fits, push fits, and sliding fits; allowances for finish turning, filing, polishing, grinding, reaming, lapping, and honing; and tooling dimensions.

Its 11 chapters are written in clear, non-technical language and contain over 350 illustrations. To obtain the 50th edition of "How To Run A Lathe", remit 25c (for paper binding) or \$1 (for fabrikoid binding) direct to South Bend Lathe Works, Dept. CP, South Bend 22, Ind. When inquiring specify CP 5084 on handy form, pages 2 and 3.

Lists British patents

Listing 54 British patents of chemical compositions, 2-page sheet includes material on detergents, textile finishing agents, synthetic resins, plastics, lubricants, coatings, petroleum, and others. List BP-1 is issued by Patent Publications, Dept. CP, Box 4094, Washington 15, D. C. When inquiring specify CP 5085 on handy form, pages 2 and 3.

740-page book gives principles of chemical thermodynamics

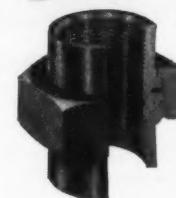
Developed from the viewpoint of the chemist rather than the physicist, 740-page book extends the treatment of thermodynamics normally encountered in introductory texts. Subject is advanced with mathematical rigor. Although concepts and equations are developed from first principles, reader must be familiar with applications of elementary thermodynamic theory.

Contents cover temperature; first law of thermody-

Catawissa
PERFECT SEAL
Unions

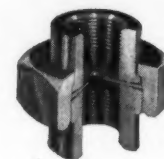
**HOT FORGED from solid
RECTANGULAR STEEL
BARS to give you SURE-
FIRE PIPING DE-
PENDABILITY**

**A TYPE FOR
EVERY USE!** **PERFECT SEAL
even with pipe not
in alignment!**



**Standard & Double
Extra Heavy
UNIONS**

Available with
screwed or socket
weld ends. 3000-
lb. sizes 1/8" to 3";
6000-lb. sizes 1/8"
to 2".



**ORIFICE
UNIONS**

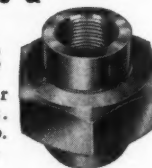
With screwed or
socket weld ends.
3000-lb. and 6000-
lb. service.

**MALE & FEMALE
UNIONS**



With steel-to-steel,
bronze-to-steel, stain-
less steel-to-steel or
orifice seats. 3000-lb.
service only.

**FULL STAINLESS &
FULL ALLOY
STEEL UNIONS**



With screwed or
socket weld ends.
3000-lb. and 8000-lb.
service.

**CATAWISSA Ends Guesswork
in Union Requirements!**

CVF write for
CATALOG 11
showing the
complete
Catawissa line

**CATAWISSA VALVE AND
FITTINGS COMPANY**
620 Mill St. • CATAWISSA, PA.

When inquiring check CP 5086
on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

namics; thermal behavior of simple systems; thermochemistry; second law of thermodynamics; thermodynamic behavior of simple systems; thermodynamic behavior of solutions and heterogeneous mixtures; chemical equilibrium; thermodynamics of galvanic cells; and statistical molecular theory of thermodynamics. Useful appendix is included.

To obtain "Principles of Chemical Thermodynamics", by Martin A. Paul, remit \$7.50 direct to McGraw-Hill Book Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y.

Welders can operate safely with protective equipment

Four-page bulletin on protective equipment for welders describes and illustrates a wide range of eye protective devices for both gas and arc welding, and includes product information on respiratory protection. Accessories such as rubber mask padding for goggles and a lens for welders who wear bifocal glasses are also described. One full page is devoted to various types of filter glasses, and includes a selector chart of types and shades for different welding operations.

"Protective Equipment for Welders" is issued by Willson Products, Inc., Dept. CP, Reading, Pa. When inquiring specify CP 5087 on handy form, pages 2 and 3.

Bibliography gives listing of technical books

Containing 64 pages, bibliography gives brief descriptions of technical books in print or in active preparation. Books cover analytical chemistry; biochemistry; physiology; medicine; chemical technology; fats and oils; organic chemistry; physical and inorganic chemistry; polymers and plastics; physics; mathematics; metallurgy and engineering; and general science. Encyclopedia of chemical technology is also included.

Books are indexed according to author and also by subject. Some other general data and information is included. 1951 catalog is issued by Interscience Publishers, Inc., Dept. CP, 250 Fifth Ave., New York 1, N. Y. When inquiring specify CP 5088 on handy form, pages 2 and 3.

Lists standards available

Twenty-six-page standards price list covers more than 1180 specifications, methods of test, and symbols and abbreviations in civil engineering and construction, mechanical engineering, electrical engineering, safety codes, ferrous and nonferrous materials and metallurgy, rubber, textiles, mining, pulp and paper, and gas burning appliances.

Important new standards listed include a series on electric discharge lamps — general service, instant-starting single-pin hot cathode, cold cathode, and bactericidal; electrical indicating instruments; gas water heaters; grounding-type plug caps and receptacles; and safety requirements for operation of open-surface tanks. There are also 2 new standards on gears, one on nomenclature, terms, definitions, and illustrations, and the other on inspection of fine pitch gears.

"Price List of American Standards" is issued by American Standards Association, Dept. CP, 70 E. 45th St., New York, 17, N. Y. When inquiring specify CP 5089 on handy form, pages 2 and 3.



Markings mean just what they say on WeldELLS®

No other fittings for pipe welding are so true to their markings as WeldELLS — so absolutely uniform, mechanically, metallurgically, dimensionally.

It would be bad business for us to say this if thousands of users had not already said it for us and to us. "There are no bad ones" is nearly always the foremost reason given by practical men for insisting on WeldELLS.

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Offices in all principal cities

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When inquiring check CP 5090 on handy form, pgs. 2-3

Please send a copy of your data sheet covering Taylor Forge Welding Fittings and Forged Steel Flanges.

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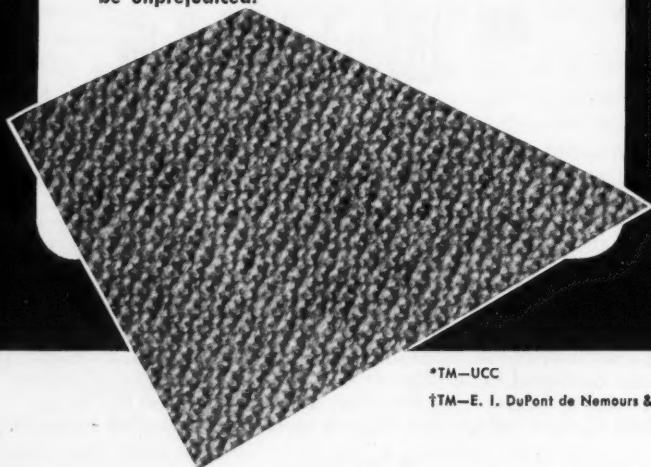
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While the advantages of synthetic filter media are outstanding and are fully reflected by our wide range of filter media woven from Nylon, Orlon[®], Vinyon Nt, Saran and Glass, there are nevertheless some filtration operations where cotton filter media still have their place.

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When inquiring check CP 5091 on handy form, pgs. 2-3

NEW LITERATURE

Illustrates controllers for synchronous motors

Eight-page, 2-color bulletin illustrates and describes polarized field frequency controls (standard interrupting capacity type) for synchronous motors — full-voltage, reduced-voltage, and part-winding starting.

Data given include ratings, weights, dimensions, wiring diagrams, layout drawings, and other specifications. Bulletin 3100-PRD-204 is issued by Electric Machinery Mfg. Company, Dept. CP, Minneapolis 13, Minn. When inquiring specify CP 5092 on handy form, pages 2 and 3.

Miscellaneous lab items and instruments shown

Six-page folder illustrates and describes miscellaneous instruments, laboratory apparatus, and safety devices. Items number 37 and range from fluorine atom model to twin ebullimeter. "37 New Developments" is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 5093 on handy form, pages 2 and 3.

Dimensional data given for air blowers

Six-page air blower bulletin gives engineering layouts, typical application data, design data, ratings, and other specifications. Units are illustrated by line and cutaway drawings. Publication 88 is issued by The Standard Stoker Company, Inc., Dept. CP, 370 Lexington Ave., New York 17, N. Y. When inquiring specify CP 5094 on handy form, pages 2 and 3.

Ratings of compressors: 2, 3, 5, and 7 1/2 hp

Detailed descriptions and illustrations of refrigeration compressors and condensers rated at 2, 3, 5, and 7 1/2 hp are given in Bulletin 101-110, issued by Westinghouse Electric Corporation, Sturtevant Div., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 5095 on handy form, pages 2 and 3.

Tells use of formulations in controlling odors

Four-page bulletin outlines formulations for stamping out obnoxious industrial odors. Bulletin covers the nature and origin of odors, especially as they relate to waste water systems and sewage disposal; approaches to

THE STANDARD-HERSEY "PILOT" DRYER...



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When inquiring check CP 5096 on handy form, pgs. 2-3

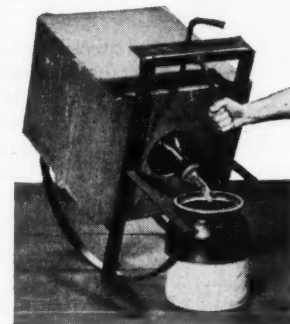
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SMOOTHER FLOW provided by acid-resistant pouring spout at rates up to 5 gal. per minute.

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48 pages; hundreds of safety items completely described and illustrated. Price list included.

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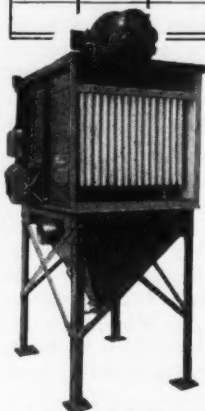


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SAFETY EQUIPMENT FOR EVERY HAZARD

When inquiring check CP 5097 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Type "CL" Collector with side removed showing bank of screens

with Pangborn Industrial Unit Dust Collectors!

Don't let dust losses rob you of profits. Control dust in specific areas with Pangborn "CL" Unit Dust Collectors. They're delivered factory assembled, ready to use. Have non-sag, individually removable screen frames, motor-driven screen shaker . . . all-metal construction (except filter cloths). Models available with cloth area from 180 to 820 sq. ft. Write for Bulletin 912 to PANGBORN CORPORATION, 2700 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Dust Control and Blast Cleaning equipment

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DUST CONTROL

stops the dust hog from stealing profits

When inquiring check CP 5098 on handy form, pgs. 2-3

ABBÉ ENGINEERING

Millings

Vol. 2, No. 1, Is Just Off the Press

It features faster, better mixing of fluids and pastes, greatly increased sifting capacity with less floor space, and other new techniques.

Write for a copy, and ask to be put on the mailing list.



ABBÉ ENGINEERING CO. 46 CHURCH STREET
NEW YORK 7, N. Y.
Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 5099 on handy form, pgs. 2-3

JUNE, 1951

NEW LITERATURE

specific problems; and the way formulations are used to subdue odors.

Bulletin 502 is issued by Brooks Chemicals, Inc., Dept. CP, 3304 E. 87th St., Cleveland 27, O. When inquiring specify CP 5100 on handy form, pages 2 and 3.

Tests dynamic strains and vibrations

Two-page bulletin specifies instrument designed for dynamic strain and vibration studies from 0 to 50,000 cps. Simultaneous observation and recording of 4 strains are possible. Instrument is for use with maker's resistance wire strain gages.

Bulletin 331 is issued by Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 5101 on handy form, pages 2 and 3.

Details power resistors in 195 pages

Composed of 8 chapters, 195-page handbook presents practical information on construction, application, and performance characteristics of power resistors. Contents include over 55 photo and line illustrations, 15 graphs, and 20 tables.

To obtain "Handbook of Power Resistors", remit \$3 direct to Dept. 040, Ward Leonard Electric Co., Dept. CP, Mount Vernon, N. Y. When inquiring specify CP 5102 on handy form, pages 2 and 3.

Densities and gravities of miscellas given

Applying over the range of operating temperatures used in commercial processes, "Densities and Gravities of Cottonseed and Peanut Oil Miscellas in English Units" is issued by Southern Regional Research Laboratory, 2100 Robert E. Lee Blvd., New Orleans 19, La.

Shows fire extinguishers

Complete line of portable and special purpose fire extinguishers is shown in handy guide. Chart provides information for selecting the right extinguisher for every type of fire hazard.

Chlorobromomethane and all standard, approved extinguishing agents are represented. Fire Extinguisher Guide is issued by Stop-Fire, Inc., Dept. CP, 125 Ashland Place, Brooklyn 1, N. Y. When inquiring specify CP 5103 on handy form, pages 2 and 3.

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VAPORS

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Petro-Chem Development Company engineers are heating specialists... they can supply the whys and wherefores of indirect versus direct heating and the economics of both.

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Faville-Levally, Chicago • Lester Oberholz, Calif.

When inquiring check CP 5104 on handy form, pgs. 2-3

Read This First



before you install a filter

Lower initial cost, replacements cut in half, positive filtration, easier maintenance... are reasons for specifying Cuno MICRO-KLEAN fluid filters.

Free bulletin describes why Cuno can guarantee MICRO-KLEAN to remove all solids larger than specified plus a large proportion down to 1 micron.

Request Bulletin PJJ-0351. Address Cuno Engineering Corp., 169 South Vine St., Meriden, Conn.



Fluid Conditioning

When inquiring check CP 5105 on handy form, pgs. 2-3

Save time! Prevent accidents!

LIFT AND DUMP MECHANICALLY

**BAGS
BARRELS
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BOXES**

REDUCE HANDLING COSTS with a Cescro Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



When inquiring check CP 5106 on handy form, pgs. 2-3

BUFLOVAK-DOPP PROCESSING KETTLES

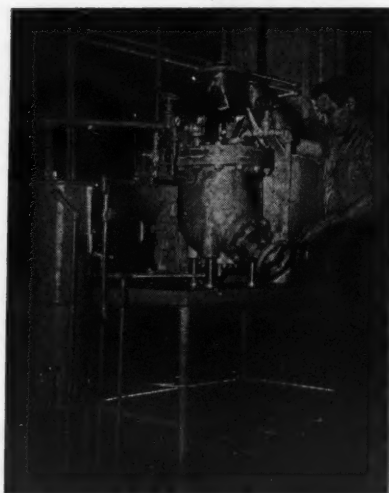
Efficiently Serve Many Industries

YOUR product can be processed in this Dopp Kettle that is installed in the BUFLOVAK Research and Testing Laboratory.

Larger equipment is also available.

Results are positive because they are conducted on a pilot plant scale.

Write for particulars.



BUFLOVAK-DOPP Processing Kettles are used for thorough mixing of a wide range of chemical and food products.

Performance records show considerable savings in steam, power and operating time.

Exclusive features in design and construction assure uniform mixing, heating and cooling. The result is a better, more uniform product, produced at lower cost!

Complete details upon request.

**BUFLOVAK EQUIPMENT DIVISION
of BLAW-KNOX COMPANY**
1645 Fillmore Ave. Buffalo 11, N. Y.

When inquiring check CP 5107 on handy form, pgs. 2-3

NEW LITERATURE

"Heating, Ventilating, and Air Conditioning Guide"

Bound in blue cloth, 1476-page book measures 6 x 9", contains 50 chapters of technical data. Contents include information on design of panel heating systems; ASHVE psychrometric chart; tables on properties of moist air; information on determining solar heat gain and cooling load capacity requirements; accepted data on friction loss in ducts and methods of duct design; ASA symbols for use on drawings of heating, ventilating, and air conditioning equipment; and general information on 50 topics generally considered as being the most important in these fields.

Book is in sections, subdivided into chapters. Sections broadly cover fundamentals; human reactions; heating and cooling loads; combustion and consumption of fuels; systems and equipment; special systems; and instruments and codes. Catalog data section gives various indices to equipment. To obtain "Heating, Ventilating, and Air Conditioning Guide", 1951 edition, remit \$7.50 direct to The American Society of Heating and Ventilating Engineers, Dept. CP, 51 Madison Ave., New York 10, N. Y. When inquiring specify CP 5108 on handy form, pages 2 and 3.

Tells German developments in synthetic lubricants

German developments in synthetic lubricant oils are reviewed in 12-page report. Included are description of the chlorine method of synthesis, giving the percent yields of various oils; discussion of the paraflow synthesis and its application to lubricant oils with solidification points between -10 and -30°C; and review of the synthesis of lubricant oils from propylene by polymerization with $AlCl_3$. Properties of propylene oils are given, as well as results of engine tests.

To obtain PB 101 870, remit 50c (by check or money order payable to the Treasurer of the United States) direct to Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

Automatic package marking adds additional data

Six-page brochure shows graphically how a variety of nationally known producers of cosmetics, drugs, textiles, automotive parts, and other products automatically imprint supplementary information on their packages as an integral function of the packaging operation. These supplemental imprints range from complete contents descriptions to code-dates, and include colors, sizes, prices, and similar data.

Also described are various machines for imprinting cartons, boxes, cans, canisters, jars, and bottles. "New Approach to Package Imprinting" is issued by Adolph Gottscho, Inc., Dept. CP, Hillside 5, N. J. When inquiring specify CP 5109 on handy form, pages 2 and 3.

Viscosity, plasticity discussed in book

The phenomena of viscosity and plasticity are covered in 84-page book containing 32 figures. The subject is approached with a special view to those who deal with viscous and plastic materials on an industrial scale — especially paint technologists.

Book is in 3 parts. Part 1 discusses the nature and theories

CHEMICAL PROCESSING

of liquid viscosity. It aims at establishing general principles and deriving from these an understanding of the complex behavior of flowing liquids and solids. Part 2 deals with the flow of simple liquids, suspensions, and gels. It also considers thixotropy, dilatancy, and other properties affecting flow. Part 3 considers the flow of solids. It covers sols and gels which can be poured slowly or with difficulty.

To obtain "Viscosity and Plasticity", by E. N. Da C. Andrade, remit \$2.25 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N. Y. When inquiring specify CP 5110 on handy form, pages 2 and 3.

Gives results of tests on packing rings

Four-page packing ring bulletin contains results of lab tests — photoelectric stress analyses and radial pressure examinations — made by reproducing various packing ring designs in transparent plastic and then subjecting them to pressure. Tests were made by independent research organization. Made in 5 types, these rings are recommended for use in valves, pumps, hydraulic cylinders, rams, presses, and lifts against a long list of services and pressures. Rings are described and illustrated. "Vee-Flex" is issued by Raybestos-Manhattan, Inc., Packing Div., Dept. CP, Manheim, Pa. When inquiring specify CP 5111 on handy form, pages 2 and 3.

German insecticide innovations abstracted in bibliography

Presenting 30 abstracts of recent German patent applications and war-time research accounts in the insecticide field, Research Bulletin 53 is issued on letterhead request to Research Information Service, Dept. CP, 509 Fifth Ave., New York 17, N. Y.

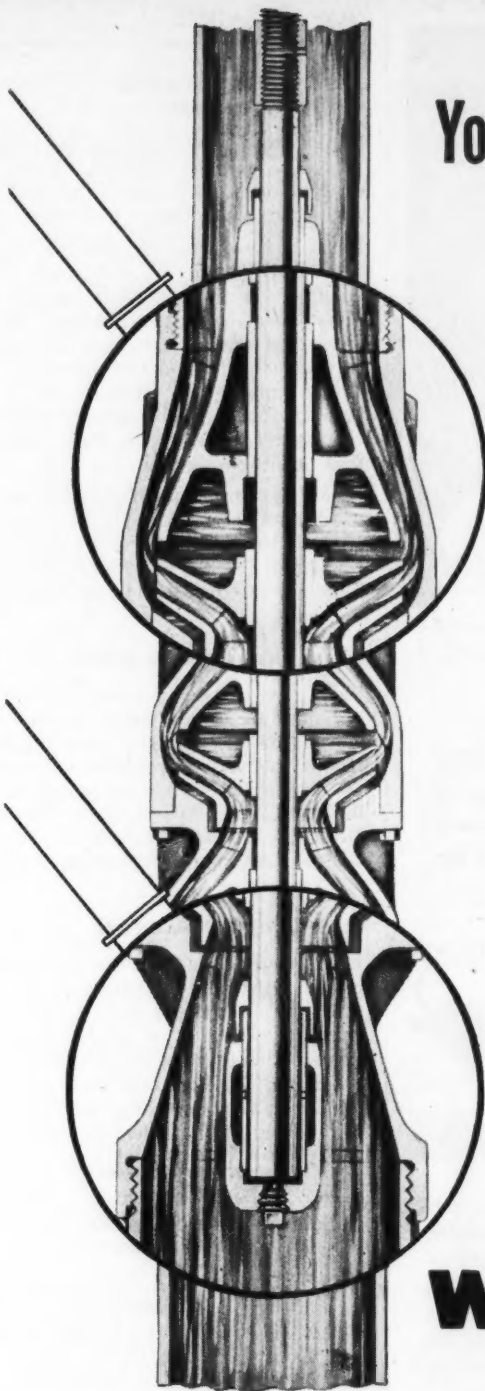
Maintains pump and air control in pressure tank systems

Four-page bulletin offers details on a combination pump and air control which holds level accurately, maintains pressure, and coordinates action of 2 or more pumps in pressure tank systems. Applications are in deep well systems, booster systems, and large surge tanks. Bulletin 1510 is issued by Automatic Control Company, Dept. CP, St. Paul 4, Minn. When inquiring specify CP 5112 on handy form, pages 2 and 3.

Fluidization principle used to make sulphur dioxide

Four-page, 2-color bulletin describes an economical process for making sulphur dioxide from pyrite or pyrrhotite. Process is a distinct departure from conventional roasting in that fluidization principle — the suspension of particles in an upward-moving stream of gas — is used. Of particular importance are the economic advantages, production of exceptionally high-strength gas, and simple operation.

Process is briefly described; components are diagrammed, and 2 alternate flow sheets are given. Bulletin 7500 is issued by The Dorr Company, Dept. CP, Barry Place, Stamford, Conn. When inquiring specify CP 5113 on handy form, pages 2 and 3.



You Can't Lose Your Bearings

**when you follow the tip
to buy WORTHINGTON**

When you buy a vertical turbine pump, be sure the top and bottom bearings are well protected.

Here's the protection Worthington gives the bearings of its pump—better protection than you'll find in any other vertical turbine pump.

Bottom bearing. It's grease-packed and won't need attention for the life of the pump. Tests of grease-packed bearing versus rubber bearing show the advantage greatly in favor of the former.

Top bearing of oil-lubricated models. Seals above and below the drain ports keep out abrasives which would cause wear and damaging vibration. They also prevent water from entering the tube, which could cause emulsification of the oil and accelerated wear of the line shaft—a Worthington exclusive.

Sand collars. In water-lubricated models, sand collars at both ends of bowl assembly provide further protection by keeping abrasives away from the bearings.

Worthington Vertical Turbine Pumps are available in sizes from 6 in. up, to handle liquids at temperatures of minus 7F. to 500F., with maximum head per stage over the entire size range.

For other Worthington exclusives—such as flanged and bolted bowls in *all* sizes—write to Vertical Turbine Pump Division, Worthington Pump and Machinery Corporation, Harrison, New Jersey or Denver 16, Colorado.

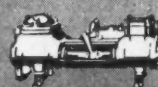
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ASSURES YOU THE
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Vertical Turbine

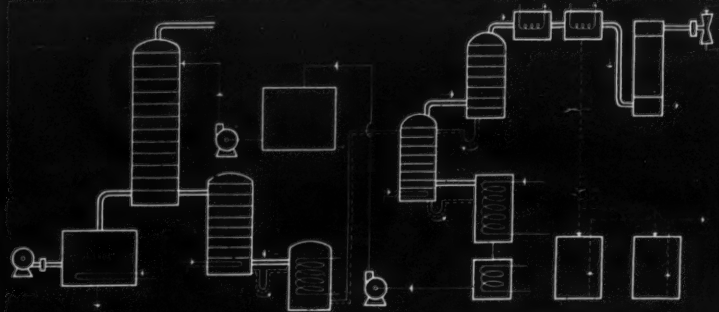


Centrifugal



When inquiring check CP 5114 on handy form, pgs. 2-3

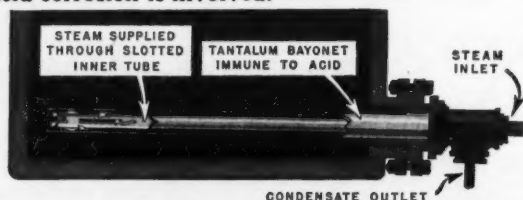
a \$4,000,000 Process...



dependent on a
\$300 heater!

Any number of elaborate and expensive processes can be cited where the success of the process depends upon the continuity of performance of a single heat exchanger unit. If the unit is shut down, the process is shut down. That is why Tantalum Heaters are so important where acid corrosion is involved.

Installation of Fansteel Tantalum Bayonet Heaters is made through side or bottom openings in vessels. With the heater entirely submerged, the total area of the tantalum bayonet is an active heating surface.



FANSTEEL ACID-PROOF TANTALUM BAYONET HEATERS

Tantalum combines the physical properties of steel with the chemical properties of glass... the results, speed in heat transfer, acid-proof—for most acid solutions and corrosive gases or vapors, and freedom from thermal shock. Fansteel Tantalum Heaters heat faster—save time, fuel and space—have a long life expectancy—give freedom from product contamination due to corroded equipment.

For consultation on any corrosion or heat transfer problem where Tantalum can be economically used to your advantage, consult Fansteel engineers... they are at your service. Fansteel Metallurgical Corporation, North Chicago, Illinois, U. S. A.

USE TANTALUM WITH ECONOMY for most acid solutions, corrosive gases or vapors; not with HF, alkalis or substances containing free SO₂.

Write for informative bulletins on Tantalum Acid-Proof Chemical Plant Equipment.



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Fansteel

Acid Proof

TANTALUM
CHEMICAL PLANT EQUIPMENT

12403-C

When inquiring check CP 5115 on handy form, pgs. 2-3

NEW LITERATURE

Rubber lining of pump resists abrasives

Sixteen-page, 3-color catalog describes and specifies rotary pump for handling abrasives. Rubber lining resists action of abrasives; maker reports that rubber outlasts equivalent metal parts by at least 4 to 6 times.

Pump deviates from conventional rotary models in that a very small quantity of clear water is introduced into the volute and suction eyes of the impeller at pressures slightly higher than the pump discharge. Water laden with abrasives thus cannot leak back through annular clearances between impeller and side plates into the pump suction or to the stuffing box. Elimination of abrasive "slippage" between rotating and stationary pump parts prevents abrasive wear from enlarging these clearances—efficiency is thus maintained.

Action is thoroughly diagrammed in three colors. Cutaway views, performance tables, and various applications are included. Catalog 451 is issued by Allen-Sherman-Hoff Co., Dept. CP, 225 S. 15th St., Philadelphia 2, Pa. When inquiring specify CP 5116 on handy form, pages 2 and 3.

Pulp mills use these drives

Eight-page bulletin describes electric motor drives. Applications are in pulp mills, for use on barkers, saws, chippers, grinders, material handling equipment, washers, pumps, and allied apparatus. Bulletin is illustrated with 18 photographs of drives in operation in existing mills. Bulletin GEA-5520 is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 5117 on handy form, pages 2 and 3.

Basic information on pH

Informative 2-page bulletin gives basic data on pH, especially its meaning, applications, and measurement. Tables show different values for common acids and alkalis, the intensity of acidity or alkalinity, and the most desirable range of industrial waters for different conditions and applications. Bulletin 28X7636 is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1114 S. 70th St., Milwaukee, Wis. When inquiring specify CP 5118 on handy form, pages 2 and 3.

Collected bulletins cover viscosity, viscometers

Collection of 6 allied bulletins presents data and general information on viscosity and viscometers. "Viscosity Packet" is issued by Brookfield Engineering Laboratories, Inc., Dept. CP, Porter St., Stoughton, Mass. When inquiring specify CP 5119 on handy form, pages 2 and 3.

Hydrocarbon compounding data fills 52-page tech bulletin

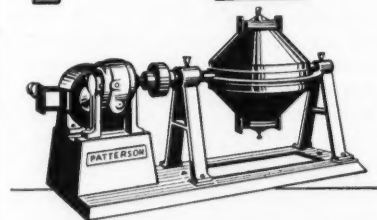
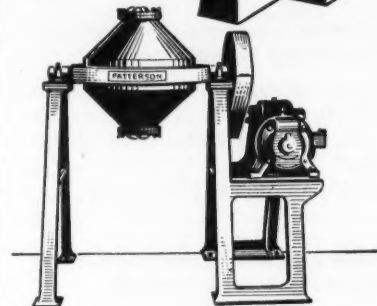
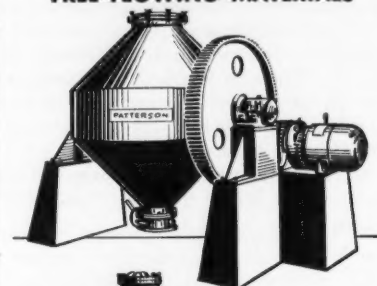
Fifty-two-page illustrated bulletin gives technical information regarding hard hydrocarbon in both natural rubber and GR-S compounds. Covered in the bulletin are uses in relation to tires and treads, smooth tubing channel compounds, molded slab shoe sole compounds, code wire and ignition cable insulation, garden hose, and similar applications. Mixing and testing procedures are outlined in considerable detail.

Compound is blend of petroleum-derived blown asphalts having complete compatibility in natural and most chemical

Patterson

CONICAL DRY BLENDERS

FOR *Economical*
BLENDING OF ALL
FREE-FLOWING MATERIALS



PERFECT BLENDING with even the smallest additions is assured in minutes—whether for laboratory, pilot or full-scale production—at lowest cost. Write for our latest Blender Catalog!

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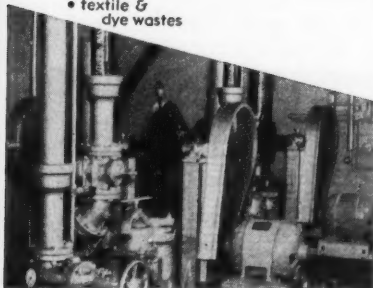
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When inquiring check CP 5120
on handy form, pgs. 2-3

CHEMICAL PROCESSING

* "problem" liquids

- chemical waste & slurries
- textile & dye wastes

[illegible]

EMULSIFICATION
COAGULATION
AGITATION

- pulp and paper sludges
- oil separations
- lime putty & slurries
- distillation mashes
- sugar bagasse
- gum & chickle slurries
- meat packing wastes
- fruit & acid wastes
- salt slurries
- industrial water reclamation and purification



- * Gasoline or power-driven
- * 2 GPM to 400 GPM
—at varying pressures
- * 16 sizes and types

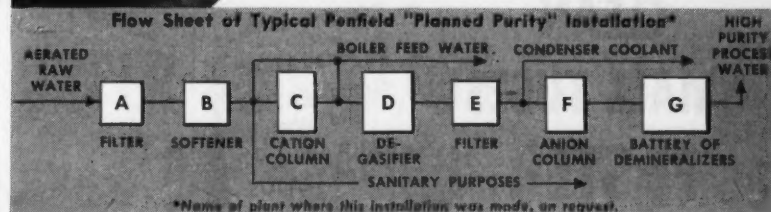
Write today for details
187 Atlantic St.

R. B. CARTER SALES
INC.
Hackensack, New Jersey

When inquiring check CP 5121
on handy form, pgs. 2-3

A black and white portrait of a man with dark hair, smiling broadly. He is wearing a dark suit jacket over a light-colored shirt and a dark tie. He is looking slightly to the right of the camera. The background is plain and light-colored.

- with "PLANNED
PURITY" WATER**



Pictured above is a Penfield Four Column Demineralizer with a capacity of 1000 gals/hr. In comparison to distilled water costs, Penfield Industrial Demineralizers provide savings as high as 85% and in one reported instance cut costs 78%. No heat or steam power is ever required and units are ready for immediate operation on arrival at site. Send for "Penfield Pays" folio giving specifications of all Penfield Demineralizing units — from 10 gals/hr. to 10,000 gals/hr.

FILTERS • SOFTENERS • DEGASIFIERS • DEMINERALIZERS

Penfield "Planned Purity" PAYS!

When inquiring check CP 5124 on handy form pgs. 2-3

ROTOJET Junior TUBE CLEANERS

CLEAN SMALL TUBES FASTER

With ROTOJET Junior Tube Cleaners you can clean tubes as small as .495" I.D. quickly and economically. Very little headroom is required for either vertical or horizontal tubes. Tube bundles can be cleaned without removal from shell.

The unusual power developed by the ROTOJET Motor is due to its simple design and exclusive Rotocentric (egg-shape) bore cylinder. A shaft and a blade are the only moving parts. Positive contact between blade and cylinder is always maintained. No leakage. No stalling at low speeds. Water-driven motors are also available.

Try ROTOJET Junior, and you will never go back to heavy, slow, external type cleaners costing many times more.

SEND FOR
ROTOJET JUNIOR BULLETIN

S32 ROTOJET Junior
Air-driven Motor, uni-
versal joint, cone cut-
ter.

C434 ROTOJET Junior
Air-driven Motor, flexi-
ble coupling, expanding
brush.

C324 ROTOJET Junior
Water-driven Motor,
univ. joint, pivot head.

ROTOJET Junior TUBE CLEANERS



ELLIOTT COMPANY-ROTO DIVISION

141 Sussex Avenue

Newark 1, N. J.

When inquiring check CP 5125 on handy form, pgs. 2-3

Page 100

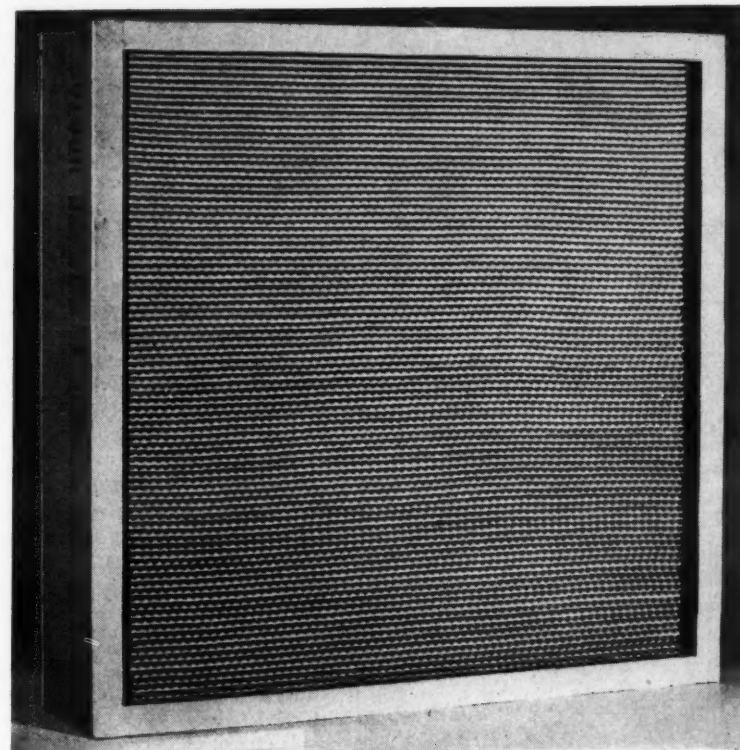
Air Filter Passes Only One Particle Where Conventional Types Pass 1000 to 3000

Air that goes through paper-asbestos medium
is practically sterile; filters handle up to 1000
cfm in central air conditioning systems

USES: Removing fine dust particles from air. Should be useful wherever air must be completely dust free or sterile, as in manufacture and assembly of precision devices, or in biological laboratories, pharmaceutical plants and photographic film manufacture. Similar filters have been used for four or five years by the Atomic Energy Commission to keep radioactive particles out of the atmosphere.

Since this is a final air cleaner, it is usually advisable to use a prefilter or precleaner ahead of it when dust loads are relatively heavy. Precleaners can be electrostatic precipitators, scrubbers, or ordinary low pressure fiber filters, the choice depending on dust load and other conditions.

Features: In tests conducted in connection with atomic energy developments, filter passed an average of only a single particle when filtering air containing as many as 20,000 particles of various kinds. Conventional air cleaning devices passed 1000 to 3000



This filter, in air supply duct, handles 500 cfm

Efficiencies of Various Fiber Air Filter Media Against Atmospheric Dust Based on Count of Particles From Impactor

	Flow Rate, fpm	Pressure Drop, inches water	% Particles Passing
Air Filter Paper at Start	5	0.80	0.020
Same After 68 Hr Use	5	1.00	0.005
Two 1/2" Layers Bonded 1.3 Micron Glass Fiber Mat	27	1.50	0.6
Hard Wool Felt (Blow-back Bag Filter) at Start	20	0.8	70.0
Same After 5 Week Use	20	2.8	7.6

particles. Spores and other air-borne organisms are in the size range of the dusts which are removed by the filter. Therefore, the air which has passed through filter is very nearly sterile and can be used wherever it is needed. The table with this article shows efficiency of the

medium as compared with two other dry fiber air filter media. Particle counts were made with high speed impactor. Air flow rates are not the same because the tests were conducted at the flow rate under which the medium was intended to operate. A commercial electrostatic precipitator operating under normal conditions showed an efficiency of 91% when tested by this method.

Description: Filtering medium itself is special soft and felt-like paper containing sub-microscopic asbestos fibers which direct air through such tortuous paths that essentially all particles become entangled in the fibers. Large sheets of this paper are folded

in accordion fashion and fitted into a frame, thereby providing a large filtering surface in a relatively small space. Single units can be built to handle 1000 cfm at pressures within capacities of central station air conditioning systems which are becoming much more common.

CHEMICAL PROCESSING

In mounting filter for service, it must be secured snugly to rigid support. Draw bolts or clamping devices are needed to hold gaskets firmly compressed. Frame work and other parts of supporting structure must be absolutely tight against leaks. In some few cases, it has been found necessary to use gasket seals on both sides of filter, with clean air pressure in the space between them.

Filters are made of combustible materials so they can be burned in an incinerator. Because they will burn in an air stream if accidentally ignited, it is advisable to take adequate precautions against this hazard. Filters should not be used under conditions where they might become wet because moisture, if extreme enough, will soften the paper.

Work is being done on developing an equally good, thin, all-mineral fiber filter which will not have these disadvantages. Mineral fibers have the added advantage of being more resistant to strong chemical fumes.

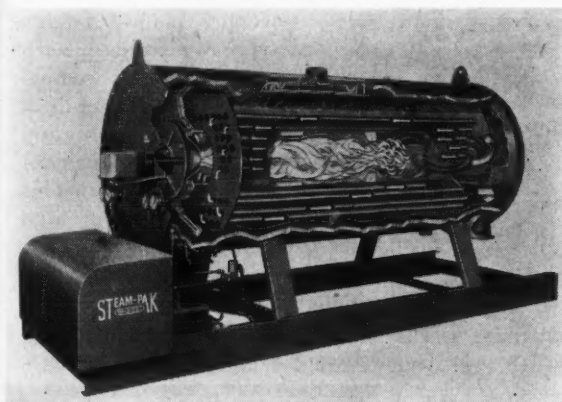
Source: Cambridge Corp., Dept. CP, 350 S. Geddes St., Syracuse, N. Y. . . . or for more information check CP 5126 on handy form, pages 2 and 3.

Fast circular motion of flame insures efficient combustion, prevents chamber burnouts . . .

motion is created by blowing excess air into chamber around burner; in generators of 15-250 hp

Uses: As package steam generator using gas, oil or combination of gas and oil.

Features: Flame swirls in extremely fast circular motion through the entire combustion chamber, providing greater heat absorption with higher heat transfer. Swirling flame action is created by blowing swirling excess air into chamber around burner. This swirling action speeds flow of gases through boiler, forming a circle of preheated



air around the flame and tucking in loose flames that would otherwise tend to impinge and burn out the refractory combustion chamber.

Description: At the center of the combustion chamber is located a factory-adjusted carborundum ring which regulates the length of the circulating flame by squeezing it and drawing excess air into the center. This flame action contributes to completing combustion of gases before they reach the bank of tubes.

Combustion chambers are available in all maker's package generators, sizes 15 hp to 250 hp for low pressure, high pressure, steam or hot water.

Source: Steam-Pak generators are built by York-Shipley, Inc., Dept. CP, 62 Jessop Place, York, Pa. . . . or for more information check CP 5127 on handy form, pages 2 and 3.

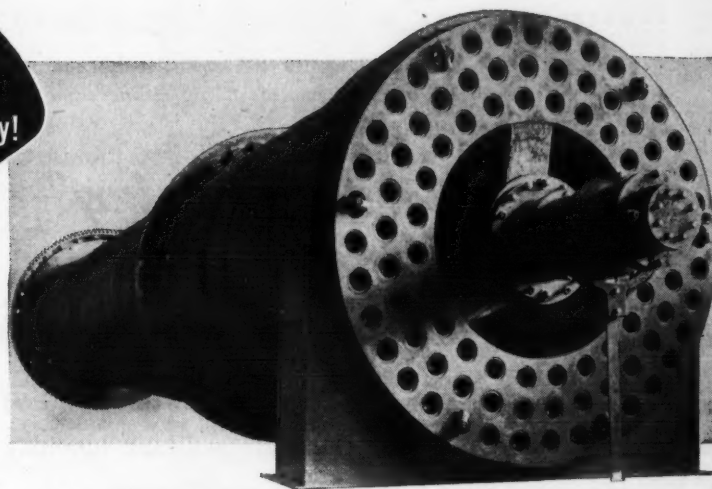
JUNE, 1951

See Louisville for

**CREATIVE
DRYING
ENGINEERING**

New LOUISVILLE DRYER adds 12,000 lb. to daily production . . . saves 88¢ per 100 lb. it dries!

**KNOW THE
RESULTS
before you buy!**



FORMER DRYER

Installed cost.....	\$64,000
Daily production (dry product-lb.)	8,000
Space occupied (sq. ft.).....	750
Drying cost per 100 lb.....	\$1.442

LOUISVILLE DRYER

Installed cost.....	\$16,400
Daily production (dry product, lb.)	20,000
Space occupied (sq. ft.).....	480
Drying cost per 100 lb.....	\$1.5535

NEW INSTALLATION

PAYS FOR ITSELF IN 491

DAYS OF CONTINUOUS

OPERATION

Ask for new treatise on subject of rotary dryers

Other General American Equipment:

Turbo-Mixers, Evaporators, Thickeners,
Dewaterers, Towers, Tanks,
Bins, Filters, Kilns, Pressure Vessels



Compare the facts and figures shown at the left. More persuasively than anything else that could be said, they tell you why this chemical company decided on a new Louisville Dryer. It was especially designed for this manufacturer after a Louisville engineer surveyed his drying processes. Savings—added production and extra protection from contamination were forecast by tests of the new equipment in our unique research laboratories and pilot plant—proof that it pays to know the results before you buy!

It costs you nothing to have a Louisville engineer survey your drying methods. Write today.

Louisville Drying Machinery Unit

Over 50 years of creative drying engineering

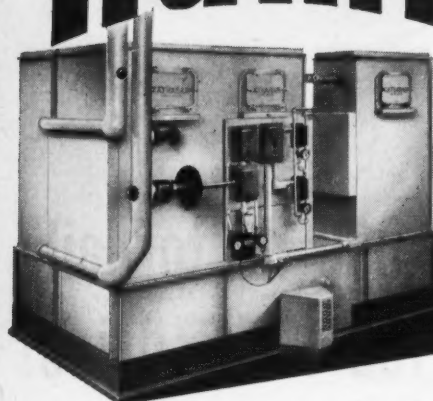
GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer Sales Office: Hoffman Bldg., 139 So. Fourth Street
Louisville 2, Kentucky

General Offices: 135 South La Salle Street, Chicago 90, Illinois
Offices in all principal cities

When inquiring check CP 5128 on handy form, pgs. 2-3

Humidity



**"ENGINEERED
TO ORDER"**

**WHEN YOU ARE CONFRONTED WITH ATMOSPHERE
PROBLEMS...THINK OF HUMIDITY CONDITIONING**

Believe us! ... humidity can play havoc with quality control and production schedules. We have hundreds of case histories from the processing industries where...

"Humidity Engineering"
with the **Kathabar System**

was responsible for new production possibilities and greater operating efficiency. Don't overlook humidity ... one of the basic factors in air conditioning.

Surface Combustion Corporation has pioneered in "Humidity Engineering". Basic application data, accumulated during many years of research and field operation of the Kathabar System of Humidity Conditioning, are available to you. Why not take advantage of this knowledge.



HEADQUARTERS FOR HUMIDITY CONDITIONING

SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO

CP

Please add my name to receive the "HUMIDITY ENGINEER"

NAME.....TITLE.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

When inquiring check CP 5129 on handy form, pgs. 2-3



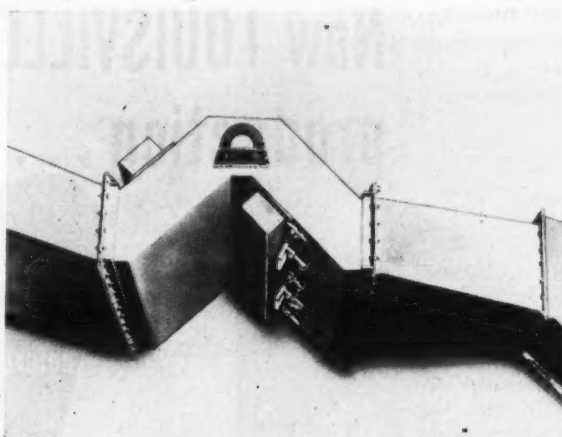
PROCESSING EQUIPMENT

**Improved permanent magnets
now included as a part of
hump-type separators . . .**

add rigidity, ease cleaning, extend service life, prevent loss of magnet strength

Uses: Installed vertically, hump-type permanent magnetic separator removes tramp iron from heavy, loose-flowing materials conveyed in down spouts. Being applied in the textile, chemical, ceramic, metal working, milling, and paper fields.

Features: "ATOMagnets" are improved permanent magnetic separators now being installed in all of maker's Gravity Flow Hump assemblies. Riveted construction adds



New permanent magnets being used in hump-type separators

rigidity, continuous hinge of non-magnetic aluminum eases cleaning and extends service life, and aluminum cover prevents accumulation of iron on backs of castings, causing loss of magnetic strength.

Description: Gravity Flow Humps are stocked in sizes from 4 to 40" chute widths and may be built larger for special applications. Adaptors suit the units for either round or rectangular openings.

Strategically placed baffles within the units direct material flow 30° from the normal straight line so that permanent magnets installed on opposite faces of the hump can set up a magnetic barrier in tandem.

Source: Announcement of the Eriez Manufacturing Company, Dept. CP, Erie, Pa. . . or for more information check CP 5130 on handy form, pages 2 and 3.

**Fluorine plastic tubes, rods
for high temperature service
now made in larger forms . . .**

also withstands low temperatures, is chemically resistant, has good electrical properties

Uses: In applications where good electrical properties and chemical resistance are important.

Features: Exceptionally chemical resistant and withstands very high and very low temperatures.

Description: Kel-F is a fluorine, high-temperature resistant plastic. It is a polymer of trifluorochloroethylene. To meet new requirements, it is now being produced in larger forms and in special shapes in sheets, extruded rods, molded rods, and extruded tubing as follows: extruded tubes with diameters as large as 2" and walls .020" thick; heavy gauge sheeting, or pressed discs, up to 1/4" thick;

**LEARN about UNIQUE
BASIC RAW MATERIAL
ELECTRO-CARB
Special
REFRACTORIES**



**Use Coupon or
Write for Bulletin**

Specialists in silicon carbide and in products made from this unique basic raw material, Electro has acquired technical competence and "know-how" both in the production and application of Electro-Carb (silicon carbide) and products made from it. This specialization may be of high service to you.

The coupon will bring you Bulletin B-749 and supplement K-378, both in almost telegraphic brevity as to facts and figures

**concerning SPECIAL
REFRACTORIES
COUPON**

ELECTRO REFRACTORIES & ABRASIVES CORP.
344 Delaware Ave. Est. 1919 Buffalo 2, N. Y.

Please send us Special REFRACTORIES Bulletin B-749 and Sup. K-378.

Firm.....

Address.....

City.....Zone.....State.....

Alt. of Name.....Title.....

When inquiring check CP 5131
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

extruded rods 7/16" in diameter; molded rods as thick as 1 1/2".

For special orders, shapes such as narrow-width, thin tape and very small cross-section fibers also have been extruded. (M. W. Kellogg Co., Jersey City, N. J. supplies Kel-F to this processor).

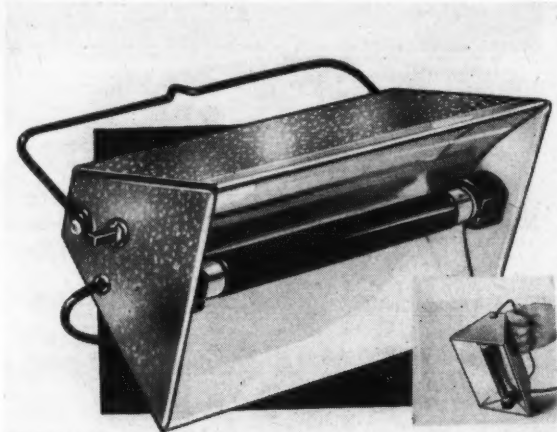
Source: Plastic forms produced from Kel-F are available from Plax Corp., Dept. CP, Hartford, Conn. . . . or for more information check CP 5132 on handy form, pages 2 and 3.

Inspection, sorting, analysis with ultra-violet lamp units uses no extra filters . . .

tubes made of self-filtering glass; reflectors are spectral-finish aluminum

Uses: Utilizing principles of fluorescence in inspection of containers, etc., and in laboratory analysis for detecting adulteration, impurities, spoilage in products intended for human consumption. Used in textile and dyestuff industries.

Features: Self-filtering "black-light-blue" tube allows the long wave ultra-violet rays (3650 angstrom units) to pass through, but filters out the undesirable rays in the visible portion of the spectrum. No additional filters are



Ultra-violet units plug in or use battery

required, and the cool operating tubes will last for 2000 to 3000 hours. Lamps are designed to require less darkness than lamps using separate filters.

All sizes are equipped with "spectral-finish" aluminum reflectors that can give more reflected UV intensity than many other materials. Tubes are made of self-filtering glass.

Description: Available in 4, 8, 15, 30, 40, and 80 watt sizes, fixture is unusual in that it may be rested on a flat surface, mounted flush to wall or ceiling, or hung from brackets. The 4 and 8 watt sizes have a special trunnion type bail that allows them to be tilted to any position within a 180° plane of the mounting surface. These models may also be used as portable inspection lights, as they weigh only 1 3/4 lb and have an over-all dimension of 3 1/2 x 4 x 6 1/2". Available with single and double tubes.

Source: Ultra-Violet Products, Inc., Dept. CP, South Pasadena, Calif. . . . or for more information, check CP 5133 on handy form, pages 2 and 3.

Votator

PROCESS NEWS

• HEATING or COOLING . . . CONTINUOUS CLOSED SYSTEM

• CRYSTALLIZING

• CONTROLLING HEATS OF REACTION

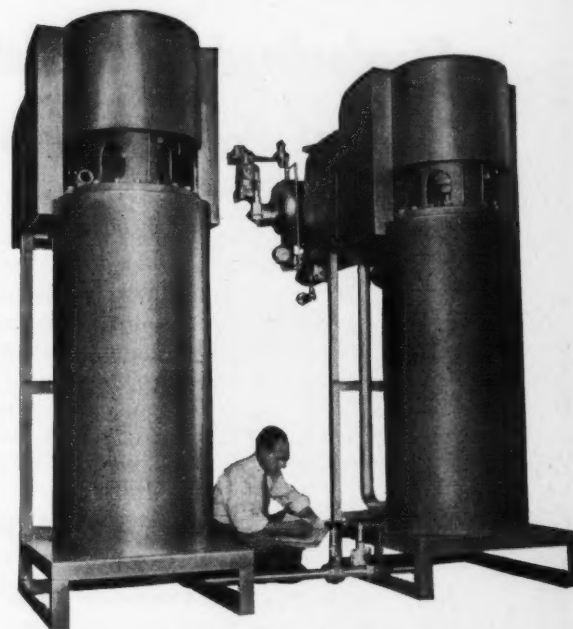
SAVES MANPOWER

VOTATOR Heat Transfer Apparatus provides continuous, closed system operation, under precise mechanical control, for processing liquid and viscous materials. This results in substantial labor savings, since less handling is required, and the processing operation is completed in a matter of seconds.

Liquid resins and other chemical products, for instance, can be cooled to predetermined temperatures at rates from 20,000 to 30,000 lbs. per hour. Depending on the heat-transfer medium used, materials can be heated as high as 700°F, or cooled as low as -150°F.

Only a small quantity of material is processed at any one time, at high speed. Thus heating or cooling is accomplished quickly and efficiently. Close control over the entire operation assures complete uniformity of product, prevents contamination. The whole operation is faster, cleaner, more economical—and takes far less floor space than other methods.

In addition to heating and cooling, VOTATOR Heat Transfer Apparatus can be used for crystallizing and controlling heats of reaction. Girdler's complete service covers process engineering and design, manufacture of equipment, and installation. The Girdler Corporation, Votator Division, Louisville 1, Kentucky.



VOTATOR 24" Heat Transfer Units—heavy duty processing apparatus for the chemical field. Among products involving straight heating or cooling now being processed with VOTATOR Heat Transfer Apparatus are: phenolic resins, formaldehyde resins, alkyd resins, melamine resins, vinyl resins, wax, viscose, rosin, printing ink, chlorinated hydrocarbons, latex, asphalt emulsions, photographic emulsions, wax emulsions, linseed oil, lecithin, gelatine, and petrolatum.

GET THIS FREE BOOK TODAY!

This 32-page book gives you the complete story of VOTATOR Processing Apparatus. Describes the processing of an amazing variety of food and industrial products. Contains 12-page technical section with valuable reference data and charts. Write for free copy today.



VOTATOR—T.M. Reg. U.S. Pat. Off.

THE GIRDLER CORPORATION

Votator Division

When inquiring check CP 5134 on handy form, pgs. 2-3

Expanding on Converting?

See  For



Standardized or Specialized Chemical Process Equipment

Your plant — like many others throughout our nation — may soon be expanding operations or converting facilities. If so, you will find it profitable to investigate GB's ability to design and produce all types of chemical processing equipment. Our large, modern integrated plant consists of a foundry, machine, welding and miscellaneous auxiliary shops. Our engineering department is staffed by chemical and mechanical engineers, experienced in many branches of the process industry.

PARTIAL LIST OF GB EQUIPMENT:

Single and Multiple Effect Evaporators; Filters, Pressure and Vacuum of cast iron, steel, bronze and stainless steel; Flakers and Flaker Drums; Large Special Grey Iron Castings; Cast Iron Pipe Fittings, Large and Special; Chemical Plant Equipment; Concentrators; Condensers, Surface, Vertical and Horizontal; Condensers, Barometric; Vacuum Crystallizers; Heaters; Heat Exchangers; Heavy and Light Plate Work; Kettles, Plain and Jacketed; Rotary Vacuum Filters; Vacuum Filters, Continuous; Vacuum Pans of All Standard Metals; Vallez Rotary Filters; Webb Cotton Presses.

In addition to our standardized equipment, we solicit special equipment and jobbing work to customer's specifications.

GOSLIN BIRMINGHAM MANUFACTURING CO., INC.

BIRMINGHAM 1, ALABAMA

NEW YORK: Goslin Birmingham, 350 Madison Ave.

CHICAGO: F. M. deBeers and Associates, 20 N. Wacker

When inquiring check CP 5135 on handy form, pgs. 2-3

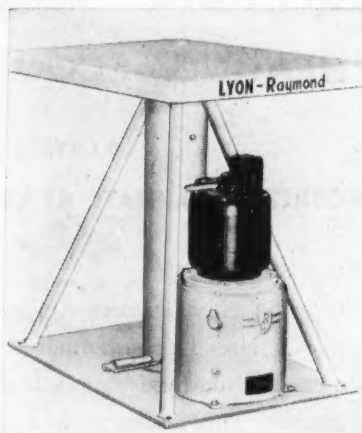
PROCESSING EQUIPMENT

Motors drive these pumps for hydraulic tables . . .

speed of operation is increased
Uses: Motor-driven pumping unit for maker's line of hydraulic tables.

Features: Pump increases the speed of table operation.

Description: Pump can be operated by either pedal-controlled foot switch or push-button hand switch. Unit has



Pumping unit installed on maker's hydraulic table

self-contained oil reservoir and is supplied with either conventional or pancake ball bearing motor, rated at $\frac{3}{4}$ hp, with current characteristics as required.

Source: Lyon-Raymond Corporation, Dept. CP, 63-80 Madison St., Greene, N. Y. . . . or for more information check CP 5136 on handy form, pages 2 and 3.

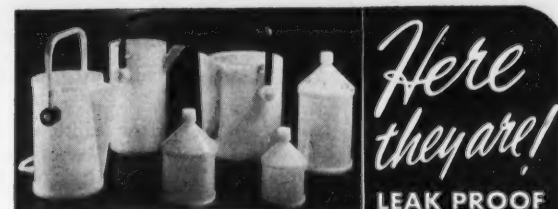
Cathodic etching aids metallurgical studies . . .

no chemical artifacts to contend with, crystal shapes more evident

Uses: For etching the surfaces of metals so that their grain structures and cold flow lines can be studied. Expected to find extensive application for pure research in metallurgy, as well as in production sampling. Recommended for use where chemical etching is difficult.

Features: Main advantage of cathodic etching lies in the fact that etching is produced physically rather than chemically, thus there is less danger of forming oxides and other chemical artifacts. In addition, crystal shapes and other characteristics of the metal are brought out with greater clarity than is possible with an acid etch.

Description: Cathodic etching is



**LEAK PROOF
LIGHTWEIGHT AND
CHEMICALLY INERT
UNBREAKABLE**

Agilene (POLYETHYLENE)
CONTAINERS FOR STORAGE AND TRANSPORTATION OF CORROSIVE CHEMICALS

AGILENE containers are the answer to your problem of handling, storing, and transporting of corrosive materials. Their light weight, resistance to impact and chemical inertness make them ideal for chemical industries.

Write today for full information.



AMERICAN AGILE CORPORATION

PLASTIC DIVISION

5806 HOUGH AVE. • CLEVELAND 3, OHIO

MADE IN SIZES
FROM ONE QUART
TO FIVE GALLON
CAPACITY
•
WRITE FOR
QUANTITY PRICES
TODAY!

When inquiring check CP 5137 on handy form, pgs. 2-3

The "MASTER" Line OF MATERIALS HANDLING EQUIPMENT

The Most Complete Line of Materials Handling Equipment on Wheels

*Buy the type of machine
that fits your job.*



Write TODAY for one or more of these new catalogs . . .

- (24) Master JackLift Electric Trucks and JackStacker Electric Trucks.
- (25) SpaceMaster Electric Fork Trucks.
- (26) Master JackLift Trucks, Hydraulic and Mechanical Handlift Trucks, WeldMaster Skid Platforms.
- (27) SpaceMaster Gas Fork Trucks.
- (28) PowerMaster Stackers, Lifters, Handy Hoisters, Portable Cranes.
- (29) FloorMaster Trucks.
- (30) ToteMaster Gas Trucks.
- (31) LoadMaster Racks for Pallet, Platform, Barrel, Drum, Bin, Unit Loads.

The "MASTER" Line

LEWIS-SHEPARD PRODUCTS INC.

146 Walnut Street, Watertown 72, Massachusetts

Midwest Plant: Crawfordsville, Ind.

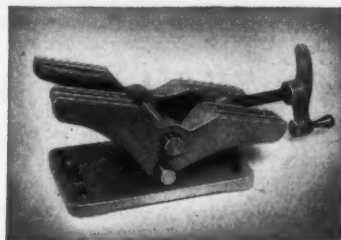
Sales & Service in Principal Cities

When inquiring check CP 5138 on handy form, pgs. 2-3

It's NEW!
It's DIFFERENT! It's BETTER!

LOVEJOY TILTING MOTOR BASE

Only
\$6.00
each



This new, low price tilting motor base is for fractional motors up to $\frac{1}{4}$ horsepower. Maintain correct belt tension or, when used with a variable speed pulley, desired speed is obtained simply by the handle screw adjustment. Adjustments may be made while the motor is running.

The Lovejoy Tilting Motor Base is adjustable in both width and length to accommodate all sizes and types of fractional horsepower motors. You can't afford to be without this sturdy adjustable motor base. ORDER YOURS TODAY!

Send for complete information on the entire Lovejoy line.

LOVEJOY FLEXIBLE COUPLING CO.

5072 W. Lake Street

Chicago 44, Illinois

Also Mfrs. Lovejoy Flexible Couplings, Variable Speed Transmissions and Universal Joints.

When inquiring check CP 5139 on handy form, pgs. 2-3

**BUY
EQUIPMENT
THAT LASTS!**

**"Metalsmiths"
Stainless Steel
and Monel
Utensils**



With the uncertainties ahead—it more than ever pays to use durable "Metalsmiths" corrosion-resistant utensils and get the extra service resulting from quality materials — efficient design — expert fabrication. Additional items (not shown) are beakers, stock pots, batch cans and shovels.

WRITE FOR LATEST CATALOG — PRICE LIST

METALSMITHS
Division of Orange Roller Bearing Co., Inc.
556 White Street Orange, N. J.

When inquiring check CP 5140 on handy form, pgs. 2-3

JUNE, 1951

PROCESSING EQUIPMENT

accomplished by bombarding the metal sample with positive ions from an aluminum anode — all conducted under low pressures. Under bombardment, grain boundaries are attacked at a different rate from the main bodies of the metal crystals, bringing out crystal shapes, etc.

Source: Etcher is a product of Distillation Products Industries, a division of Eastman Kodak Company, Dept. CP, Rochester 3, N. Y. . . . or for more information check CP 5141 on handy form, pages 2 and 3.

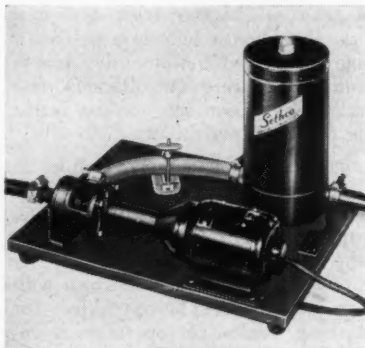
Filters hot, corrosive solutions at rate of 50 gph . . .

filter-pump unit has plastic filter

Uses: Filtering of acid and alkali solutions and many solvents, including chlorinated aromatics, at rates to 50 gph.

Features: Equipped with asbestos impregnated furfuryl alcohol resin filter cylinder, and Hastelloy pump and fittings.

Solutions up to 265°F can be filtered continuously or intermittently. This



Filter-pump unit for corrosive solutions

permits operation with corrosive chemicals at their boiling points.

Since filter cylinder holds only about 1 pint of solution, all of which is recoverable, there is no loss of solutions.

Description: Filter element of the Model HHUE-5 filter-pump unit is specially processed cotton yarn, wound around stainless steel supporting core. Porous stone and porous carbon filter tubes are furnished for concentrated acid and concentrated alkali solutions, respectively.

It is said that even the finest particles are removed. Less than 1 minute is required to get going on any job.

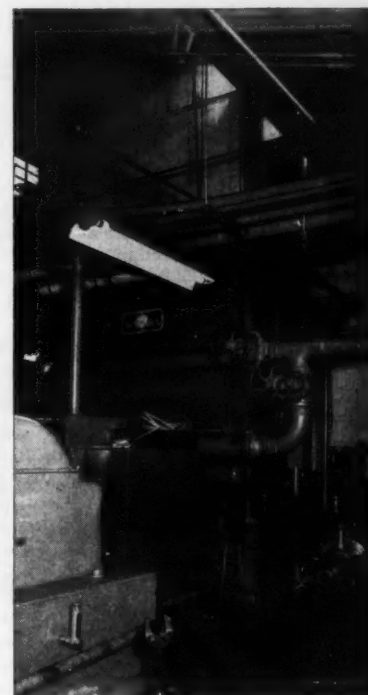
Source: Made by Sethco, Dept. CP, 105-07 150th St., Jamaica, N. Y. . . . or for more information check CP 5142 on handy form, pages 2 & 3.

You Get Trustworthy Liquid or Gas Cooling With Great Cooling Water Savings from the NIAGARA AERO HEAT EXCHANGER

● You can cool air, gas, water, oils, chemicals, electric and power and process equipment, engines, mechanical processes with lower cost and really accurate control of temperature with the Niagara Aero Heat Exchanger.

You are assured of uniform, constant production and quality from any process . . . steady, reliable operation . . . lower cost for more dependable cooling. You can have closed system cooling with freedom from scale, dirt, corrosion and maintenance troubles. You can accurately cool more than one type of liquid with one machine.

The Niagara Aero Heat Exchanger uses atmospheric air to cool liquids and gases by evaporative cooling. You can remove heat at the rate of input to keep accurate control of gas or liquid temperature. You can put heat back into the system to save the losses of a "warm-up" period or to equalize the effect of load variations.



Great savings in cooling water and savings in piping, pumping and power return the cost to you quickly. The Niagara Aero Heat Exchanger can save you approximately 95% of your cooling water cost. Write for Bulletin 96.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities

When inquiring check CP 5143 on handy form, pgs. 2-3

PROVED IN PERFORMANCE



Grinnell-Saunders Valves with CHEMICALLY INERT **KEL-F*** DIAPHRAGMS

(Pat. App. For)

Grinnell-Saunders Diaphragm Valves with KEL-F Diaphragms are living up to every promise made for them. KEL-F's resistance to chemical action, low cold flow, wide range of temperature application and exceptional flex life have combined to make it the most important diaphragm development in years. Read what users are saying...

Typical performance reports...

1. Chlorine and HCl gas with small amounts of acetic acid and acetyl chloride at 302°F. for 900 hours. Very much superior to material it replaced.
2. Mixed aromatic and ketone solvents at 230°F. and 10 psi for three months. No sign of deterioration.
3. Chlorinated organic chemical at 158 to 194°F. and 30 to 40 psi for nine months. No failure, no shutdown, no replacement.
4. Chromyl chloride at ambient temperature and 15 psi. Diaphragm condition good at end of thirty days' test.

Complete information sent on request.

*KEL-F is the registered trade name for polytrifluoroethylene, an exceptionally stable thermoplastic produced by M. W. Kellogg Co.

GRINNELL

WHENEVER PIPING IS INVOLVED



Grinnell Company, Inc., Providence 1, R. I.
Branch offices in principal cities.

PROCESSING EQUIPMENT

**No tedious, costly procedures
when automatic apparatus
performs distillations...**

unit's dimensions conform with ASTM standards for distillation tests; rate 4.5-9.0 cc/min

Uses: Instrument will perform the following ASTM tests: D 86, distillation of gasoline, naphtha, kerosene and similar petroleum products; D 268, sampling and testing of lacquer solvents and diluents; D 1078, distillation range of lacquer solvents and diluents; D 447, distillation of plant spray oils.

With a slight modification, instrument can be used for D 216, distillation of natural gasolines. It is also applicable for the organic chemistry industries and has wide use in testing or industrial control laboratories.

Features: Designed to free operator from time-consuming chores as well as eliminate the human error factor. Temperature and volume are plotted continuously; time is recorded every two minutes; heating (distillation) rate is controlled electronically; distillation rate can be varied from 4.5 cc per minute to 9.0 cc per minute.

Description: Instrument is comparatively simple to operate. After the sample flask is in place, one adjustment is made to obtain initial heat and distillation rate, and a line switch is turned on. There are no other operational steps except the removal of a continuously recorded chart. Dimensions of the apparatus conform with the standards already specified by ASTM committees for distillation tests. Everything needed for operation is enclosed within stainless steel walls. Controls are mounted on one panel directly in front of operator. Bulletin T-11209 contains complete specifications.

Source: Automatic distillation apparatus was developed in cooperation with Shell Development Company by Precision Scientific Company, Dept. CP, 3737 West Courtland St., Chicago 47, Ill. . . . or for more information check CP 5145 on handy form, pages 2 and 3.

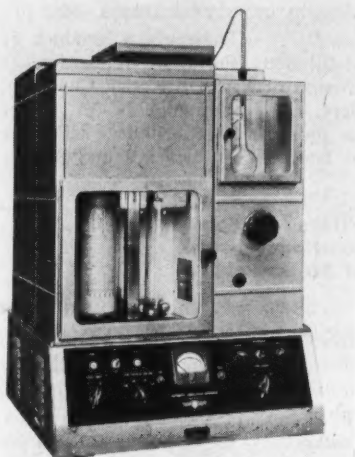
Radioactive materials now earmarked with standard warning labels...

pressure sensitive tape bears warning in approved colors; measure 1 x 1 1/2"

Uses: Pressure sensitive tape labels for radioactive hazards, chemicals, and containers.

Features: "Radioactivity" is printed in magenta color on a yellow background — approved radiation warning colors.

Description: Tape is arranged for small pieces to be easily torn off and put onto any surface. Each complete



Distillation unit enclosed in stainless steel

OMEGA

THE LAST WORD IN FEEDERS...

— for dry materials . . . sea coal, trap rock, Vinylite, hydrated lime, zinc hydrosulphite, activated carbon—and liquids . . . acids, chemical solutions, and suspensions. For Bulletins and complete information, address Omega Machine Company (Division of Builders Iron Foundry) 387 Harris Ave., Providence 1, R. I.

OMEGA MACHINE COMPANY

When inquiring check CP 5146 on handy form, pgs. 2-3

Fast, Uniform Drying On Jobs Like These

**Allis-Chalmers
Dielectric
Heaters**

OFTEN DIELECTRIC HEATING is the only solution to a drying problem requiring speed and uniformity. Here are some of the jobs you can do with versatile Allis-Chalmers dielectric heaters:

- | | |
|------------------------|--------------------------------|
| 1. Core Drying | 7. Heating rocket fuels |
| 2. Twist setting | 8. Drying gunpowder |
| 3. Sterilizing | 9. Vulcanizing rubber |
| 4. Preheating plastics | 10. Creating chemical reaction |
| 5. Drying rayon fibers | 11. Woodgluing |
| 6. Preheating linoleum | |

Continuous conveyors can carry the material between the electrodes for drying. Space requirements are small. Drying takes only a few minutes.

If you have a problem of this type, call your nearby Allis-Chalmers district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3356

ALLIS-CHALMERS



When inquiring check CP 5147 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 5144 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

design is 1½" long; rolls are 215' long, 1" wide, and can be used on a standard holder.

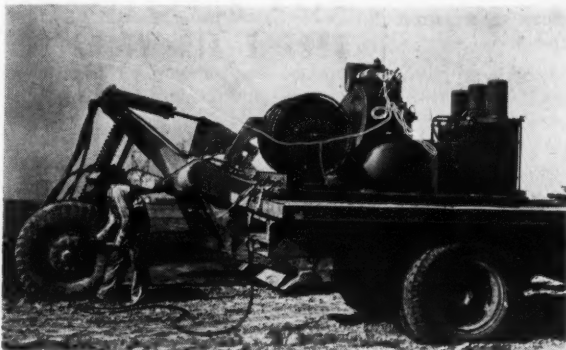
Source: Announced by the Nuclear Instrument & Chemical Corporation, Dept. CP, 229 West Erie St., Chicago 10, Ill. . . or for more information check CP 5148 on handy form, pages 2 and 3.

Complete lubrication service for heavy outdoor machinery is role of mobile units . . .

greases, oils, pumps, control valves, adapters assembled on skid for truck mounting

Uses: Designed primarily for lubricating all types of heavy machinery used in material handling, construction and similar operations. Equipment mounts on truck for mobility, can be taken to job.

Features: Pumps can handle extremely heavy lubricants. All greases and oils are pumped directly from containers (or hoppers). Completely assembled units offer great flexibility in lubricating bearings and gear cases of a wide



Lubricating big rigs on job site

variety of equipment. Job-planned units permit careful selection of each individual piece of the total assembly to meet the most specialized requirements.

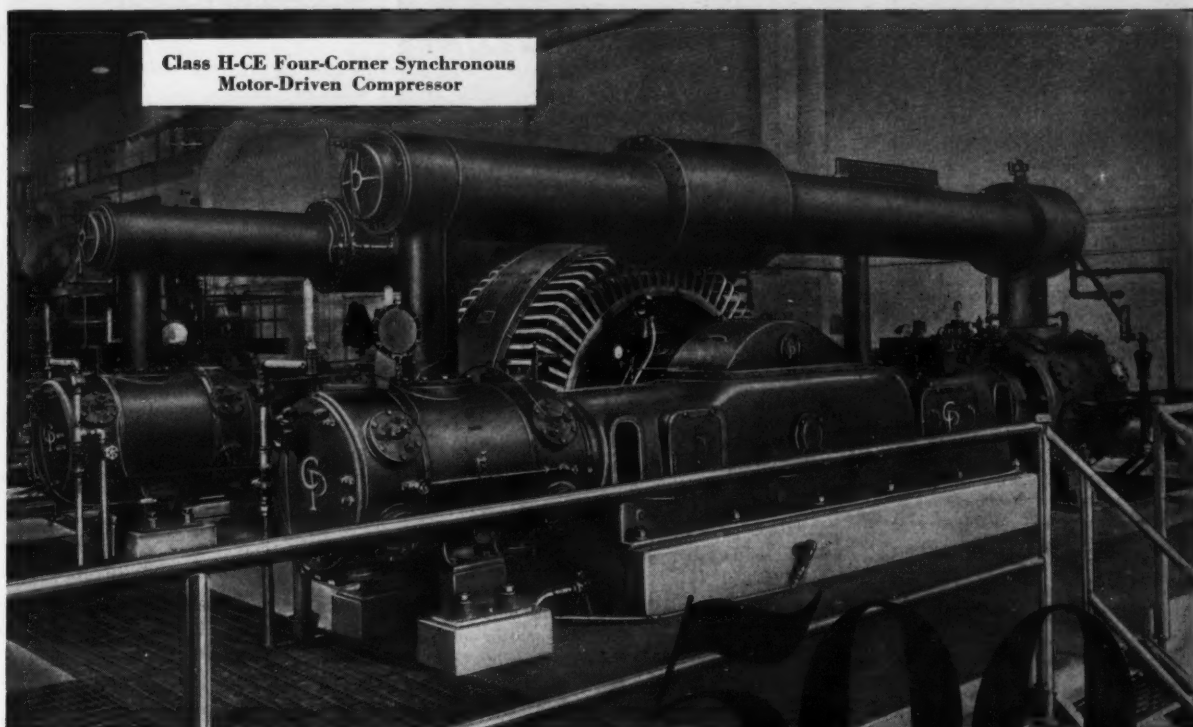
Description: Mobile lubrication assemblies for mounting on trucks consist of hose reels to dispense oil, grease and air; air-operated high, medium and low-pressure pumps for use with original drums (or hoppers); also, air compressor, tool box, all connecting hose, adapters, couplers and other essential accessories.

Two types of assemblies are available. Ready-to-work completely assembled unit includes all necessary equipment mounted on a skid so that it can be carried on truck to any point where machinery is to be serviced on the job. Job-planned units are for requirements where it is desirable to select units to provide an assembly to meet highly specialized requirements.

Two types of air-operated pumps are available for use with either ready-to-work or job-assembled units. Mogul models are powerful, double-action pumps with high volume delivery. They have an air pressure range of 20-175 psi. Standard pumps for average requirements have 100-175 psi range.

Mogul pumps are made in pressure ratios of 40:1 and 8:1. Standard pump ratios are 44:1, 10:1 and 4½:1.

Source: Convoy Lubers are built by Gray Co., Inc., Dept. CP, Grayco Square, Minneapolis 13, Minn. . . or for more information check CP 5149 on handy form, pages 2 and 3.



Class H-CE Four-Corner Synchronous
Motor-Driven Compressor

**Duplex synchronous motor-driven
Compressors in sizes from**

**500
to 12,000 c.f.m.**

piston displacement at 100 lbs. pressure

These compressors have anti-friction roller bearings throughout: spherical roller main and crankpin bearings, and heavy-duty needle bearings at the crosshead pins.

The use of roller bearings in the running gear eliminates all danger of misadjustment in maintenance. Roller crankpin bearings permit the use of solid-end connecting rods, the strongest and safest type.

a complete line

CP Compressors range from 7½ to 2000 h.p. in electric and steam-driven types, pressures to 5000 lbs.; vertical and horizontal models; CP Vacuum Pumps from 7½ to 1000 h.p.

Write for Bulletin 726



**CHICAGO PNEUMATIC
TOOL COMPANY**
General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When inquiring check CP 5150 on handy form, pgs. 2-3

Easy Positive Flow Control and Quick Shut-Off

for Controlling

- Air supply to boilers, furnaces, reactors, dryers, kilns.
- Air or gases, clean or contaminated, corrosive or abrasive; flue gases and fly ash.
- Effluent from equipment or tanks.
- Dry or wet chemicals, pulp, materials from processing equipment, tanks, bins, hoppers, pneumatic conveyors.
- Vacuum operations; sewage; solvent recovery; powdered fuel.

W. S. ROCKWELL Valves

BUTTERFLY TYPE

Full unrestricted flow of water, slurries, semi-solids, air or gas, and quick, positive, accurate regulation and shut-off. Built of any metal or rubber-lined. Pipe sizes 1" to 72". Pressure standard to 50 p.s.i. and special for higher pressures. Made for any temperature from sub zero to as high as 1800° F.

Control — Manual: lever, hand wheel, chain wheel, chain lever, etc. Automatic: electric motor, air diaphragm, air or hydraulic cylinder, solenoid, float, or other types, with positioners and special remote control mechanisms, if desired.

Wafer Butterfly Valves — rugged, lightweight, require only 1 set of bolts; sizes 4" to 72"; any type of control.

SLIDE TYPES

Standard—Made in threaded or flanged 1" to 20" sizes, with pull handle, lever or wheel control. Built of any required metal.

"Kwikleen" Type—For fluids containing solids that clog ordinary valves. Easy to clean without removing from the line by simply removing bottom clean-out plate and blowing or washing out the valve. All manual controls and also with air cylinders. Heavy duty "Kwikleen" Valves are made for 60 p.s.i. operating pressure.

Write for Catalog

High pressure, "Kwikleen" slide valve for fluids that clog valve or for granular materials; easy to clean or wash; tight seating.

30" butterfly valve for 60 p.s.i. line pressure; equipped with Limit-torque motor operator and auxiliary hand wheel.

Threaded butterfly valve, 1" to 4" sizes, manual or automatic control.

W. S. ROCKWELL COMPANY

220 ELIOT STREET • FAIRFIELD, CONN.

When inquiring check CP 5151 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Liquid sampling valve also air vent

Uses: For periodic sampling of liquids and for venting air in tanks.

Description: As shown in drawing, brass valve has steel ball inside its body which is pressed against seat of an orifice by a threaded hex bolt. Hex nut locks assembly in place. Bolt has hole through its center, and cross slot at its end nearest ball.

When bolt is backed up, steel ball is lifted from its seat by gas or liquid pressure in tank, permitting liquid to flow past ball, through cross slot and on through center hole of bolt. Valve has 1/2" male pipe thread.

Source: Oil-Rite Corporation, Dept. CP, 3405 S. 13th St., Milwaukee 15, Wis. . . . or for more information check CP 5152 on handy form, pages 2 and 3.

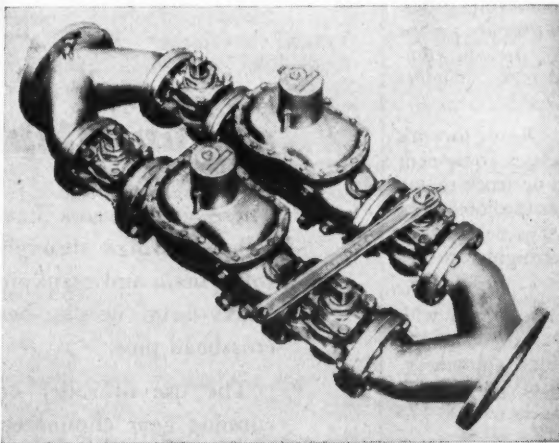
No shut-down of water system when compound meter manifold unit is installed . . .

allows one meter to be removed for servicing while other measures flow; meets AWWA standards

Uses: Designed to eliminate costly shut-downs encountered when water meter maintenance is required.

Features: Permits uninterrupted service by utilizing one of two single register compound meters while other is shut down. Manifold assembly has same flow capacity (1,600 gpm) as the American Water Works Association requirement for 8" compound meter.

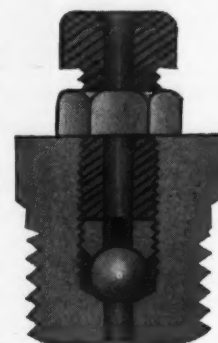
Description: Manifold assembly consists of two of builder's single register compound meters in combination with four lubricated plug valves and two 8" reducing



Compound meter manifold unit

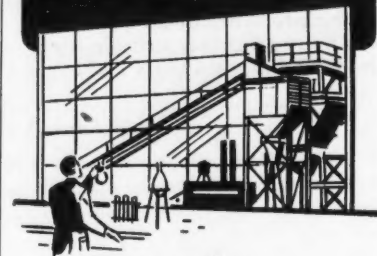
manifolds, so arranged for maintenance that one side may be shut down at a time without complete interruption of service.

By isolating one side, a meter can be removed and exchanged for one serviced and calibrated in the shop. Mean-



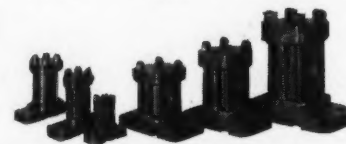
Combination sampling and vent valve

STICKY Chemicals?



Free them up

WITH A CLEVELAND
TYPE F AIR VIBRATOR



FOR free-flowing bins handling your chemicals, there is nothing better than a Cleveland Type F Air vibrator.

Plugged and arched conditions, due to your sticky chemicals, are easily and quickly removed by this rugged slugger.

It's made in 6 sizes and will move or settle from one to several hundred tons of material.

Most important, when you use AIR, the density of vibration can be varied at will.

So if your bins need the gentle touch or a heavy, hammer-like blow, the Cleveland Type F is the answer.

BIN STUCK LATELY? Just let us know. Catalog No. 105 has complete details.



2807 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 5153 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

while, flow continues through the other meter passage. It is also possible with this assembly to check test a meter in place without a break in service. To make such a test, the discharge valve of the meter may be shut off and the test plug in the meter body used for the test run.

As a unit, the manifold assembly has a laying length that is within the American Water Works Association standard for a single 8" compound meter.

Battery can be handled as a complete assembly or broken down into sections, heaviest of which is 170 lb.

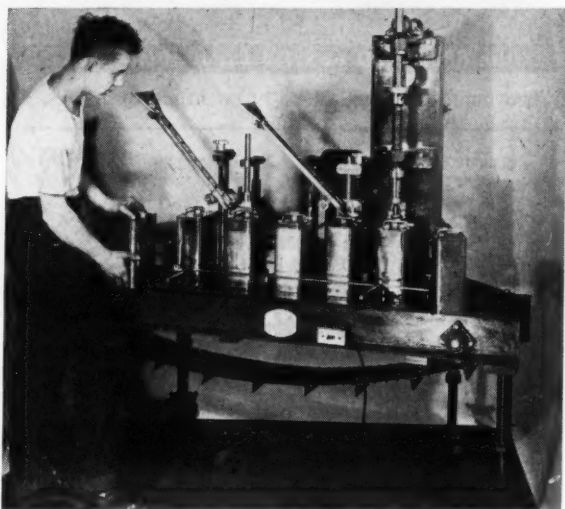
Source: Compound meter manifold units are built by Rockwell Mfg. Co., Dept. CP, 400 North Lexington Ave., Pittsburgh 8, Pa. . . . or for more information check CP 5154 on handy form, pages 2 and 3.

Automatically caps, over-seals 21 cans per minute . . .

machine is compact and mobile, conforms to speeds of conventional filling operations

Uses: Machine automatically caps, crimps, and bands 21 cans per minute with maker's 'Upressit' re-sealable caps and tamperproof over-seals. Handles cans from pint to 2-gallon size.

Features: Compact and mobile, machine is fitted on legs which can be varied in height to suit filling operations. Closures are airtight, preventing leakage, evaporation, and



Automatic capping machine applies maker's Upressit caps and tamperproof over-seals

staleness of product. Tamperproof bands assure authenticity of contents.

Description: Capper is fully automatic except for manual loading of cans, caps, and bands. Upressit caps slide down a chute at left of machine and are applied to cans as they move along a conveyor belt to the right. Bands come down a chute at the center and are crimped by the rotating crimper at the right. Speed of operation should conform to average speed of filling cans.

Construction is entirely steel, with ball and roller bearings throughout. Power is furnished by 1/2-hp motor. Dimensions are 6'6" long by 40" wide by 6' high; weight is 659 pounds.

Source: Product of Upressit Products Corporation, Dept. CP, New York, N. Y. . . . or for more information check CP 5155 on handy form, pages 2 and 3.

JUNE, 1951

Need help IN **MAKING FILTERAIDS GO FARTHER?**

**. . . a Dicalite Engineer's survey
will enable you to make sure of peak performance
in your use of diatomaceous filteraids**

Accelerated industrial production in the last few months has taxed the capacity of all filteraid producers. There is sufficient supply if the material available is so used that it performs at maximum efficiency. You are welcome to any service we can give, either in conference with your engineers or by actual work in your plant.

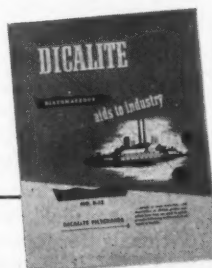
A DICALITE ENGINEER, in long experience, has learned how to secure maximum performance from diatomaceous filteraids under all conditions. He may be able to recommend changes in filtration systems or methods of operation that may both reduce filteraid consumption and improve production. Costs may also be reduced.



THE DICALITE LABORATORY, with a staff specially trained in filtration techniques, is available if further work is required. Specially designed test equipment will demonstrate the actual results to be secured by any changes recommended in either the quantity or grade of filteraid.

Please understand that no obligation whatever is attached to acceptance of this offer. Our entire aim is to stretch the available supply of diatomaceous filteraid. If you feel that a check of your filtration operation would be helpful, or if you have a current filtration problem, please write our nearest office. A Dicalite Engineer will be glad to call at your convenience.

SEND FOR
FREE COPY OF
BULLETIN B-12



DICALITE® FILTERAIDS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION



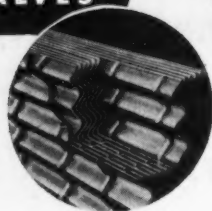
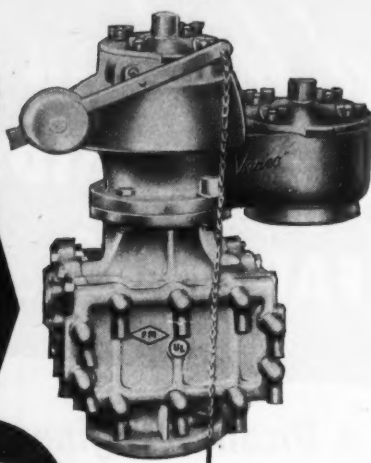
NEW YORK 17, N. Y. • CHICAGO 13, ILL. • LOS ANGELES 17, CALIF.

When inquiring check CP 5156 on handy form, pgs. 2-3

WHEN STORING FLAMMABLE LIQUIDS IT PAYS TO BE

EXTRA Safe

with
**"Varec"
FLAME
ARRESTERS**
In combination with your
VENT VALVES



"VAREC" Fig. No. 5800A Vent Unit consisting of "VAREC" Conservation Vent Valve with Flame Snuffer in combination with "VAREC" Flame Arrester.

The belief that conservation vents or breather valves alone will prevent travel of flame back into flammable liquid storage tanks is questionable because of the many contributing factors. Careful authoritative analysis reveals that valves by themselves do provide some protection but this "protection" is by no means adequate.

Safety authorities emphatically advise that "vent valves are not regarded as providing the required protection against fire and explosion." One textbook on safety states that "a conservative policy is to provide flame arresters in conjunction with other vent equipment on all cone-roof atmospheric tanks handling oils with a flash point up to 200°F open cup."

"VAREC" Flame Arresters when used as a unit with "VAREC" Vent Valves give you full fire protection at extremely low cost. Average installations run approximately 0.1 of 1% of your investment in tank and products. Consult your nearest "VAREC" representative or write for further information.



THE VAPOR RECOVERY SYSTEMS COMPANY,

COMPTON, CALIFORNIA, U.S.A.
Offices in all Principal Cities
Cable address: VAREC COMPTON, U.S.A. (ALL CODES)

When inquiring check CP 5157 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**More power, wider field
increases magnifier's
efficiency . . .**

model for table use is made in
5 and 6 1/2 power

Uses: For desk or table use of
laboratory technicians and chemists.

Features: Has fine, precision
Achromatic lenses with Neoprene gas-
kets to seal lens system against mois-
ture and dust.

Description: Magnifier is ruggedly
constructed, with aluminum body
equipped with special ring to lock



Utility magnifier

glass in focus. Eye lens has clear
diameter of 1-7/16". Objective lens
is 1 3/8". Two models are available,
the 5-power magnifier and a 6 1/2-
power magnifier.

Source: Dept. 42, Edmund Scientif-
ic Corp., Dept. CP, Barrington, N. J.
. . . or for more information check
CP 5158 on handy form, pages 2 & 3.

Up to six circuits controlled by timer . . .

time schedules can range from one
minute to one week

Uses: For programming control
where time schedules range from 1
minute to 1 week.

Features: Provides control for as
many as six circuits.

Description: "Master Pro" pro-
gram timer is offered in two series:
250 is recommended for control of
clocks, time stamps, recorders, and
signalling devices . . . 260 is more
readily adaptable for test and labora-
tory work.

Timer is available with either 2, 4, or
6 circuits for operation on 105-125
volts AC. It develops 24 volts DC for
operation of auxiliaries, or a relay net-
work can be employed for producing



in your hands..

can be a good first step toward improving spraying opera-
tions in your plant. See for yourself how Spraying Systems'
specialized experience in spray nozzle design and manufac-
ture can work for you.

Get the EXACT spray nozzle type and size to fit your need.
for Catalog 22 . . . General Catalog
Catalog 23 . . . Pneumatic Atomizing
Nozzle Catalog

WRITE

SPRAYING SYSTEMS CO.
3216 RANDOLPH STREET • BELLWOOD, ILLINOIS

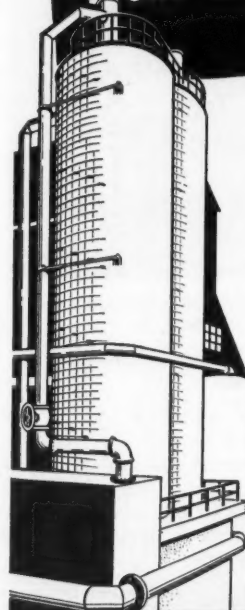
SPRAYING SYSTEMS SPRAY NOZZLES



the SPECIFIED nozzles for industrial use

When inquiring check CP 5159 on handy form, pgs. 2-3

STORE CHEMICALS SAFELY AT LOW COST



the modern MARIETTA way!

An individually planned
MARIETTA storage system
keeps stored materials bone
dry—safe from fire, weather
and moisture. Insurance
rates go down when modern
MARIETTA Concrete mate-
rials-handling and storage
systems are erected.

Our engineering depart-
ment will draw up a plan to
fit your requirements which
you can consider without ob-
ligation. MARIETTA also
does the entire erection job
in a surprisingly short time.
Write our nearest office for
complete details.

THE MARIETTA CONCRETE CORP.

DEPT. 46, MARIETTA, OHIO

Branch Offices: Baltimore, Md., Charlotte, N. C.

When inquiring check CP 5160 on handy form, pgs. 2-3

CHEMICAL PROCESSING

LEE headquarters for
the Standard and Special Designs

CORROSION-RESISTANT KETTLES



Available in sizes up to 500 gallon capacity to meet every processing need. Easy to clean and keep clean, they are practical and meet all sanitary regulations. All Lee kettles are available with hydraulic cylinders where your own water line provides the necessary operating power to safely control tilting kettles and tilting agitators in agitator kettles.

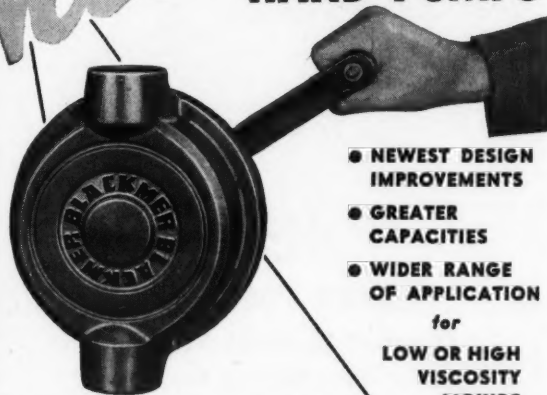
Our new descriptive bulletins sent on request.

LEE METAL PRODUCTS CO., INC.
418 PINE STREET, PHILIPSBURG, PA.

All Lee Kettles are made to A.S.M.E. Code

When inquiring check CP 5161 on handy form, pgs. 2-3

new BLACKMER HAND PUMPS



- NEWEST DESIGN IMPROVEMENTS
- GREATER CAPACITIES
- WIDER RANGE OF APPLICATION for LOW OR HIGH VISCOSITY LIQUIDS OF ALL TYPES

New Blackmer Hand Pumps provide easier, faster dispensing from drums or wheel tanks, and for liquid materials handling up to 28 gallons per minute.

FOR COMPLETE DETAILS

Folder illustrates models for dispensing, refueling, underground tank service, etc., with accessories for choice of mounting. Write for folder "HP6."

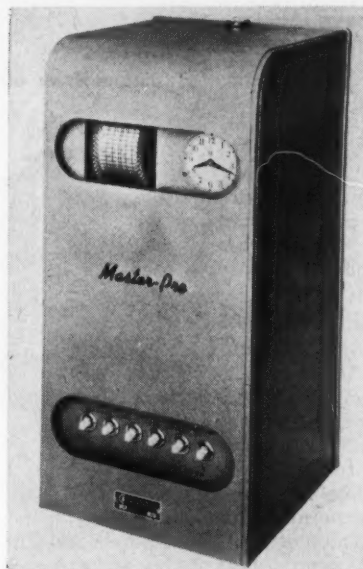


BLACKMER PUMP COMPANY
1809 CENTURY AVE., S.W., GRAND RAPIDS, MICH.

When inquiring check CP 5162 on handy form, pgs. 2-3

JUNE, 1951

PROCESSING EQUIPMENT



Program timer

either 105-125 or 24 volts AC control current.

Time schedules are easily set-up or changed. Components are housed in a rugged metal case.

Source: Announced by The Cincinnati Time Recorder Company, Dept. CP, Cincinnati 14, Ohio . . . or for more information check CP 5163 on handy form, pages 2 and 3.

Size of ground anode is 3 x 60" . . .

offers longer life, more strength and easy transport

Uses: Cathodic protection of pipe lines, tank farms, refinery equipment and all sorts of underground and underwater metal structures.

Features: Longer life because of more pounds of graphite per unit of exposed surface. Anode is rugged enough to stand normal installation bumps without damage, easy to transport to field, easy to center in backfill and easy to tamp. Shorter length requires less hole to be bored.

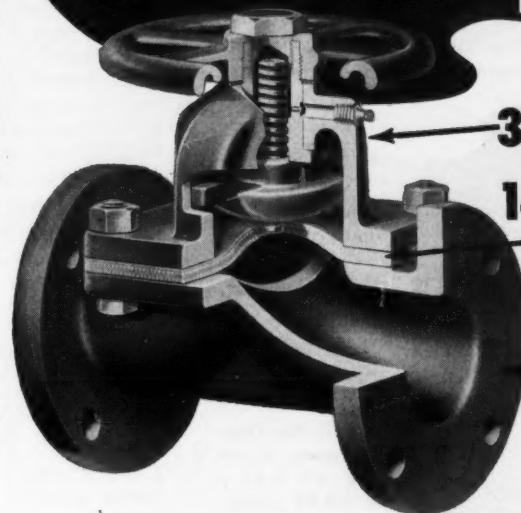
Description: "National" graphite ground anode in new size — 3 x 60". Furnished with 36" long insulated No. 8 weatherproof cable. Special cables are available for use in refineries or other oil soaked areas.

Source: Complete details available from National Carbon Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 5164 on handy form, pages 2 and 3.

Hills-McCanna offers

Over 20,000

different assemblies
for valving "hard-to-handle"
fluids



32 Bonnets

**14 Diaphragm
Materials**

**49 Body
Materials**

All the various possible combinations of bonnet assemblies, diaphragms and body materials available in Hills-McCanna valves total over 20,000! True, many of the combinations would not be practical, but this figure does indicate the tremendously wide variety of valves that Hills-McCanna offers. No matter how specialized your problem of valving corrosive and/or hazardous substances, slurries, viscous liquids, gases, fermentation products, materials subject to coagulation, foods or beverages, the chances are that Hills-McCanna can furnish the proper valve to meet your needs.

Hills-McCanna valves are Saunders patent diaphragm valves wherein the closure is affected by pressing a resilient diaphragm against a transverse weir. Working parts are isolated from the flow. The valve is leak-tight and requires no packing. Sizes from 3/8" to 14".

Write, today, for full information and descriptive literature, HILLS-McCANN CO., 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANN

Saunders patent diaphragm valves

Proportioning Pumps

Force-Feed Lubricators • Magnesium Alloy Castings

When inquiring check CP 5165 on handy form, pgs. 2-3

this WEINMAN pump is ENGINEERED NOT to clog

Plants that have to handle liquids carrying solids, foreign material and stringy trash get best results from WEINMAN Centrifugal Non-Clog pumps.

These WEINMAN pumps are best for this job because they are created to meet your specific requirements. This WEINMAN non-clog "know how" dates back a good many years. It's the cumulative experience of Centrifugal Specialists who concentrate on only ONE product—PUMPS.

Feel free to tap this experience whenever you have a pumping problem—non-clog or otherwise. The WEINMAN man is ready whenever you are. Just write, wire or phone.



Type U Non-Clogging pump is just one of many WEINMAN pumps designed to handle liquids carrying solids.

Representatives
in principal
cities

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.

294 SPRUCE STREET • COLUMBUS 8 • OHIO

When inquiring check CP 5166 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Use suspended above machine or
as a portable control . . .

enclosures of pendant pushbutton stations have oil-tight control station

Uses: For controlling operation of machinery.

Features: Oiltight control station is designed for use as a portable control or for suspension above a machine where it may be easily reached while the operator is near his work.

Description: Pendant pushbutton station comes in sizes ranging from three units including the stop to 10 units including the stop. Standard stop unit is a wobble stick in the bottom of the enclosure, but can also be furnished as a mushroom head mounted in the bottom or in front of the enclosure. Each enclosure has a cable anchor at the top. Special pendant type control stations can be built with any combination of pilot lights, pushbutton units, selector switch units, jogging units, or key-operated units.

Source: Bulletin 800T control stations are products of the Allen-Bradley Company, Dept. CP, Milwaukee, Wis. . . or for more information check CP 5167 on handy form, pages 2 and 3.

Ratings of circulation heaters reach to 100 kw . . .

"packaged" electric apparatus can be operated under relatively high pressures

Uses: Applications include: 1) preheating regular fuel oil to increase efficiency of combustion, such as with heating ovens, kilns, annealing furnaces and central heating systems. 2) Similar units are used for preheating the stiff, but low cost, Bunker C oils to make them more free

flowing and to increase efficiency of combustion. 3) Can also be employed for heating Dowtherm, Prestone solutions, heat transfer oils, etc., when connected to kettles, tanks or other equipment.

4) Still another use for these heaters is the heating of large quantities of water. They can be operated at "off-peak" hours to produce hot water that can be stored for use during the working day. A typical use would be heating of water for shower rooms, particularly



This 40 kw electric heater is used for preheating fuel oil to about 170°F to increase combustion efficiency during the summer months when central heating systems are not operated.

Features: Heaters are now available with ratings up to

NEW TWIN-SHAFT MIXER OFFERS TOP EFFICIENCY

GROEN

STAINLESS STEEL
STEAM JACKETED
**TWIN-SHAFT
MIXER KETTLE**

**ROTA-THERM
JACKET
AVAILABLE**

New! Fastest
cooking ever
known PLUS
all Stainless
advantages.
Write us.

Check into GROEN Model TA completely SANITARY Double-Action, heavy-duty, extra-rugged cooker-mixer. CONFORMS TO THE MOST RIGID HEALTH DEPT. REQUIREMENTS. Fully enclosed vertical motor drives two shafts: (1) — a slow speed shaft with extra-large shovel type scrapers; and (2) — a secondary high speed shaft equipped with any of a variety of mixers. With GROEN exclusive removable shaft couplings, ALL AGITATOR PARTS ARE DE-MOUNTABLE IN A FEW SECONDS (see cut) for easy cleaning . . . yet cannot come apart in operation. Write for Bulletin AK-1.



GROEN MFG. CO. 4533 W. Armitage Ave.
Chicago 39, Ill.
30 Church St., New York 7; 420 Market St., San Francisco 11.

half a century of fine kettles

When inquiring check CP 5168 on handy form, pgs. 2-3

NEW
WILLSON "800" Series
Chemical Cartridge Respirator
for More Wearing Comfort

- Lightweight, molded rubber facepiece — soft, snug-fitting.
- Flexible, rolled feathered edge and chin cup — comfortable, secure, effective seal.
- Improved exhalation valve — out of the way at bottom of facepiece.
- Dual cartridges absorb and filter gases and vapors. Organic vapor cartridges approved by U. S. Bureau of Mines.

WILLSON
Dependable Products Since 1870

WILLSON PRODUCTS, Inc., 227 Washington St., Reading, Pennsylvania
When inquiring check CP 5169 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

100 kw. Heavy duty construction permits operation under relatively high pressures.

Description: These "packaged" heaters have heavy steel pipe housings which enclose Chromalox tubular heating elements. Elements are alloy sheath for most jobs, but copper sheath for water heating. Units are completely insulated. Baffles are provided in housing when heater is to be operated under force circulation. Thermostats with close temperature control are available, both for the forced circulation and natural convection types. Two sets of mounting holes in frame permit quick and rigid mounting. Heater load is divided into three equal circuits, with conduit openings for each circuit.

Source: Manufactured by Edwin L. Wiegand Company, Industrial Heating Division, Dept. CP, 7500 Thomas Blvd., Pittsburgh 8, Pa. . . or for more information check CP 5170 on handy form, pages 2 and 3.

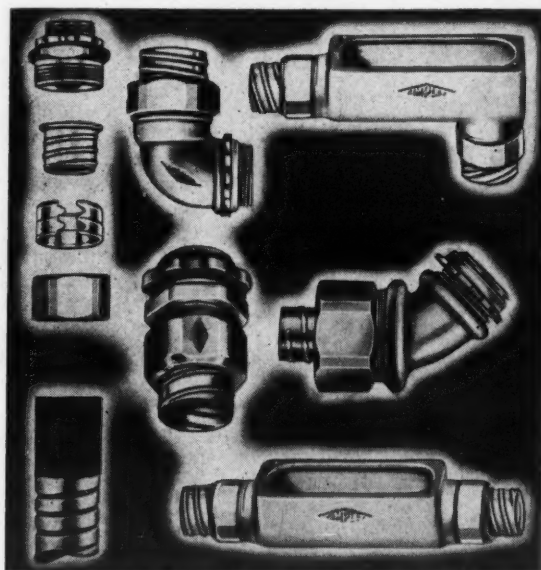
Provides vapor and liquid tight connection to covered flexible metallic conduit . . .

threaded bushing insures positive ground, eliminates need for removing burrs

Uses: For connecting synthetic covered flexible metallic conduit that is used where water, oil, chemicals, or corrosive fumes are present.

Features: Fittings are vapor and liquid tight, and have a threaded bushing or ferrule that threads into the spiral between the convolutions of metal core of the conduit, thus insuring a fool-proof, positive ground.

Description: Vap-Oil-Tite fittings and bodies are furnished in sizes from $\frac{3}{8}$ to 2". They require no other parts or materials to make sound leak-proof connections. Only a



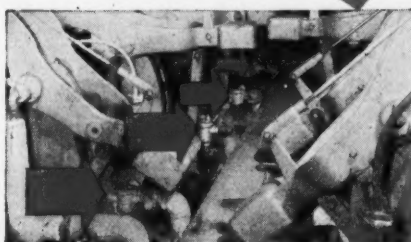
Various fittings and bodies for connecting conduit

wrench or a pair of pliers is needed for installation. Threaded bushing makes it unnecessary to burr ends of the metal core after cutting because of a collar that covers the rough edges.

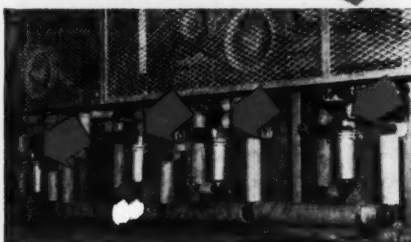
Source: The Simplet Electric Company, Dept. CP, 3602 Potomac Avenue, Chicago 51, Ill. . . or for more information check CP 5171 on handy form, pages 2 and 3.

JUNE, 1951

THE SAVINGS WILL PAY FOR THE EXTRA TRAPS!



SAVES 14 TONS COAL MONTHLY . . . that's the profitable result of changing over to Armstrong Traps . . . M. Wile and Company, Buffalo, N. Y.



2-3 HOURS FASTER HEAT-UP . . . starch drier takes new lease on life after Armstrong Unit Trapping . . . Industrial Grain Products, Ltd., Fort Williams, Ontario



40° TEMPERATURE RISE . . . pyrometer readings on flatwork ironer rolls prove performance of Armstrong Unit Trapping . . . Peter Bent Brigham Hospital, Boston, Mass.



ARMSTRONG STEAM TRAPS

When inquiring check CP 5172 on handy form, pgs. 2-3

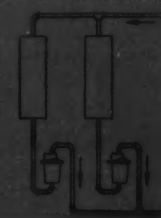
**You'll be
money ahead
with**

ARMSTRONG UNIT TRAPPING

DON'T DO THIS!



DO IT THIS WAY!



IT IS false economy to drain more than one coil, kettle, unit heater or other steam-consuming unit with a single trap. In the first place a single trap for several units must be larger and higher priced than the individual trap on *each* unit, so the difference in original cost is not as great as it might first appear. But the difference in performance can be *tremendous*. The slightest difference in condensing rate between two units will cause a difference in steam pressures between the units. Even a few ounces pressure difference will hamper drainage of condensate and, most important, will prevent or retard flow of air from the lower pressure unit. The result is widely varying and subnormal temperatures, less heat output, slower heat-up, less production and higher operating costs.

Don't be penny wise and pound foolish. Install a trouble-free Armstrong trap on each steam-consuming unit in your plant. Call your Armstrong Representative today.

ARMSTRONG MACHINE WORKS

880 Maple Street • Three Rivers, Michigan

SEND FOR THE STEAM TRAP BOOK —



36 pages of practical data on selection, installation and maintenance of traps. Yours for the asking.



*Now
off the Press!*

BENEFITS from NEW HIGH SPEED MIXER

Homogeneous Mixing Now is Obtained in Faster Time . . . at Less Cost . . . with the "ENTOLETER" Mixer.

The "ENTOLETER" Mixer is a new-type centrifugal machine designed to provide thorough mixing and blending . . . in faster time . . . at reduced cost. In actual manufacturing operations in the chemical industries, this equipment is producing amazingly uniform mixtures, simply and economically.

Continuous Mixing

The "ENTOLETER" Mixer produces a finished mixture at rates up to 250 pounds per minute. Where ingredient percentages in a formula are sufficiently large to allow accurate metering, a truly continuous operation is achieved.

Adaptable to Batch System

The "ENTOLETER" Mixer is easily incorporated in the processing system as a final mixer. It serves to shorten mixing time, with consequent savings and appreciable improvement in product quality.

SEND TODAY FOR YOUR COPY OF THIS NEW, INFORMATIVE BULLETIN — ILLUSTRATING AND DESCRIBING SOME OF THE ADVANTAGES OF HIGH SPEED CENTRIFUGAL MIXING.

ENTOLETER DIVISION

The Safety Car Heating and Lighting Co., Inc.
1185 Dixwell Avenue, New Haven 4, Conn.

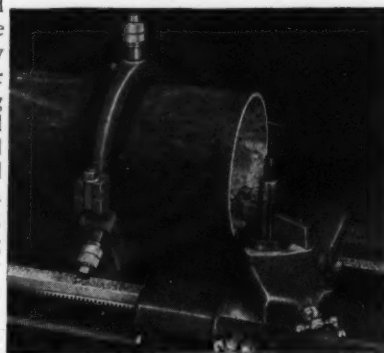
PROCESSING EQUIPMENT

Wrenchless adjustment of jaws of lathe steady rest aids handling large work . . .

especially suited for machining pipe, pressure cylinders and work that is not excessively heavy

Uses: For mounting extra large work in a lathe, such as falls within a diameter range of $4\frac{3}{4}$ " to $10\frac{3}{4}$ ". Especially suited for machining pipe, pressure cylinders, pump and engine cylinders, and similar sized work that is not excessively heavy.

Features: This extra large capacity steady rest incorporates the improved compound thread jaw actuating mechanism introduced about two years ago. This construction saves much time as it provides quick and easy wrenchless adjustment and locking for the jaws. Each jaw is moved in or out by turning a large knurled knob and is locked in the required position by a thumb screw. A double acting compound screw thread provides approximately $3/16$ " of jaw movement for each revolution of the adjusting knob. Smooth action, with just enough holding resistance, permits each jaw to be quickly and accurately adjusted to the work.



Steady rest for work $4\frac{3}{4}$ - $10\frac{3}{4}$ " OD

Description: Available for builder's 16" and 16-24" lathes and takes work between $4\frac{3}{4}$ " and $10\frac{3}{4}$ " in diameter. Steady rest top is hinged for easy mounting and removal of work. Brass jaws move in precision steel sleeves pressured into supporting frame.

Source: Steady rests for 16" and 16-24" swing lathes are built by South Bend Lathe Co., Dept. CP, South Bend 22, Ind. . . or for more information check CP 5174 on handy form, pages 2 and 3.

Miniature wires so small that 350 of them will pass through half a paper clip . . .

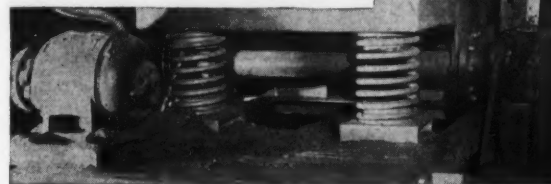
each wire consists of 4 strands of #40 copper wire; for hookup wires, flexible cables

Uses: Makes it practical to provide low voltage hookup wires, shielded lead wires, and small flexible cables that are tailor made to special needs. Production is devoted principally to lighter and more flexible stranded conductors composed of tinsel or finer gauge wires for instrument cordage.

Features: Distinctive characteristic of this process is its use of thermoplastic, thermoelastic and other film material in tape form, applied parallel to the conductor after this film has been heated to precise temperature required for complete lamination and coalescence. It is then instantly wrapped and drawn in layers until the desired wall thickness is obtained.

Additional heat and pressure, applied from all directions, assures efficient production. Conductors, cabled or single,

THE FIRST SIMPLE, PRACTICAL, LOW-COST FULLY MECHANICAL, VIBRATING FEEDER



THE VIBRA-FEEDER®—another economical Hewitt-Robins materials handling machine! Its only electrical is a light-duty plug and receptacle. Current draw—as little as 2 amperes!

First cost includes everything for easy installation. Bolt the Vibra-Feeder to any base, or suspend it, then hook up the motor—that's all!

Push-button operation. Can't be overloaded, won't bog down, feeds consistently under any load. Once set for your load, you forget it.

All moving parts— 4 bearings and eccentric shaft—are in vibrating mechanism. Low in cost, easily

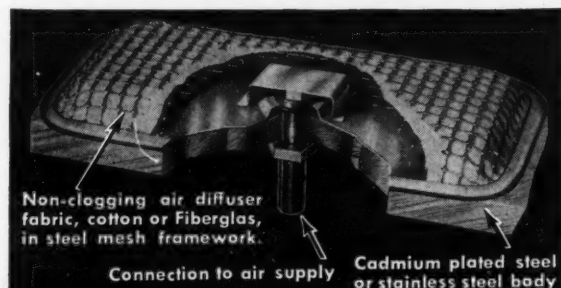
served. No expensive control boxes, tubes, motor generators, etc. to repair or replace. Only 2-point lubrication, both on vibrator. Dust-tight, impervious to heat, cold—practically noiseless.

Sizes: 24" to 48" W. and 48" to 96" L. Others for your exact needs. Write for Bulletin 135, Robins Conveyors Division, Passaic, New Jersey.

Hewitt-Robins is participating in the management and financing of Kentucky Synthetic Rubber Corporation.

HEWITT-ROBINS
VIBRA-FEEDER

When inquiring check CP 5175 on handy form, pgs. 2-3



SIMPLE LOW-COST BIN-FLO AERATOR UNITS
KEEP BULK MATERIALS MOVING

Finely ground dry materials in storage often lose air content and pack or bridge, thus losing capacity to flow.

BIN-FLO units diffuse low-pressure air through such materials, preventing packing and maintaining or restoring natural flow.

Easily installed in chutes, bins, hoppers, etc. Can be automatically controlled by BIN-DICATOR bin level indicators. Low first cost; low operating cost. Used in many industries. Fully guaranteed. Send for folder.

BIN-DICATOR—"The Eyes of the Bin" watches material levels automatically and reports to central control point. Send for free book.

THE BIN-DICATOR CO.

13946-D Kercheval • Detroit 15, Mich.



BIN-DICATOR
Bin Level Indicator

**NEW
20-PAGE
BOOK
FREE**

When inquiring check CP 5176 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

may then be covered with metal fabric braid and other coatings for special applications. Although no dies are used, insulating wall is uniform, free from pinholes, lightweight and small in size.



Miniature wires made possible by tensulation

Description: Tensulated miniature wires are so small that 350 wires pass through half a paper clip. Each wire consists of four strands of No. 40 copper wire so that 1400 strands occupy an area of $\frac{1}{4} \times \frac{5}{8}$ ".

Source: Tensolite Insulated Wire Co., Inc., Dept. CP, Tarrytown, N. Y. . . . or for more information check CP 5177 on handy form, pages 2 and 3.

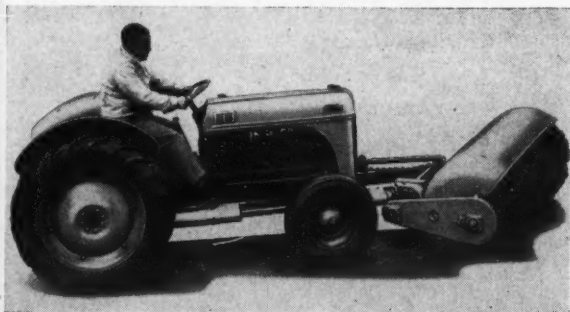
Sweeper attachment for tractor drives from rear power take-off; uses fiber or steel bristles . . .

installed or removed in 30 minutes; hydraulic control raises broom 8"

Uses: Provides powerful sweeping action for wide range of industrial requirements.

Features: Finger-tip hydraulic action raises broom 8". Full length dust hood protects operator.

Description: Especially designed for the Ford tractor. Broom may be attached, or removed, within 30 minutes. Broom tilts to adjust itself to surface. All moving parts are fully protected for operator safety. Broom is driven



Sweeps 5' swath at 30° angle; broom is self-adjusting

by rear power take-off at fixed ratio to engine speed, providing efficient sweeping at all tractor levels. Range is a 5' swath at a 30° angle, depositing debris outside of tractor wheels. Fiber or steel brushes are available.

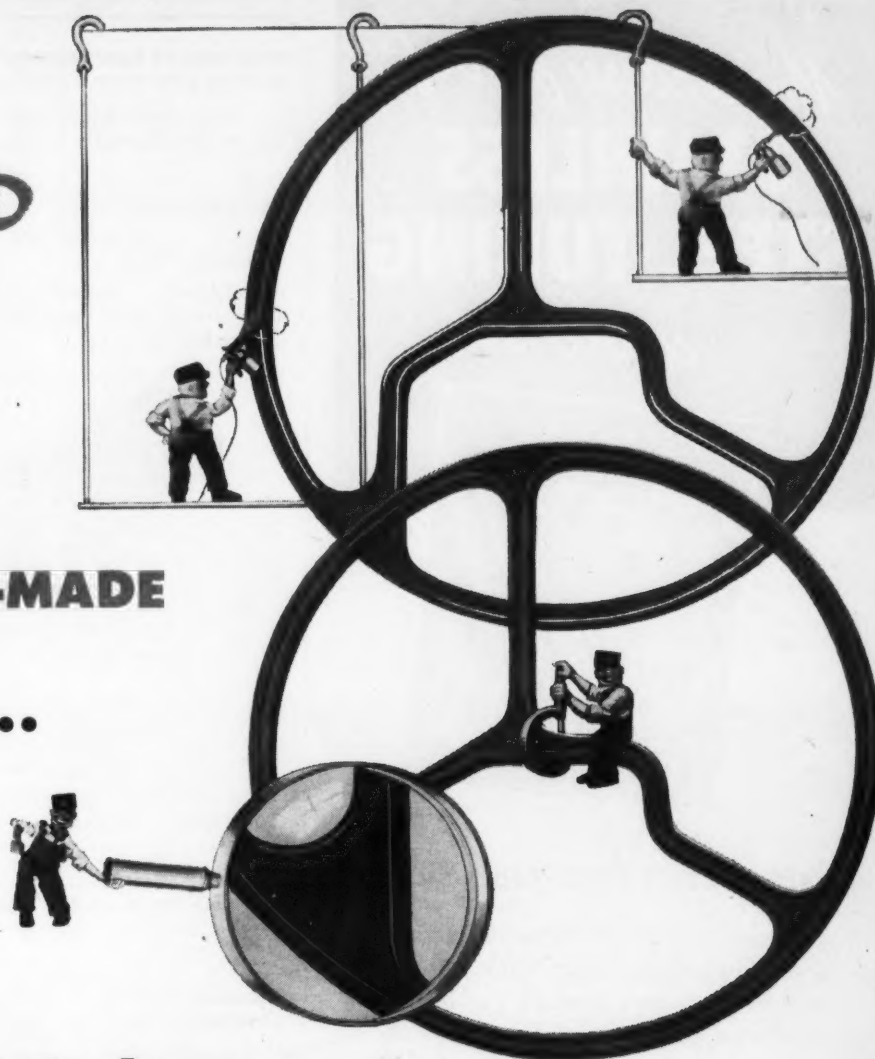
Source: Sweeper for Ford tractor is built by Meili-Blumberg Corp., Dept. CP, New Holstein, Wis. . . . or for more information check CP 5178 on handy form, pages 2 and 3.

PAINTED

to resist
rust...

PRECISION-MADE

to resist
blowouts...



...this Heat Exchanger Gasket will stay on the job longer

The durable coating of red paint on every Goetze iron or steel-jacketed Style 923 Heat Exchanger Gasket is a sure "stop light" against rust. And rust, as every metal gasket user knows, is a primary cause of deterioration—both in the storehouse and on the job awaiting installation.

Equally important in the fabrication of Style 923 is the precision

craftsmanship which eliminates cracks and wrinkles in the metal jacket—defects which can rapidly lead to leaks and blowouts.

"Custom tailoring" accounts for the meticulous care which is taken in the forming of every one of these gaskets . . . care which results in a long, efficient service life. You can always depend on a Goetze Style 923 to fit

and seal perfectly . . . to stay on the job without leaks or blowouts. And that, of course, pays off in less down time and fewer gasket replacements.

Find out how little it costs to have Goetze Heat Exchanger Gaskets "tailored" to the size and shape you need. For prompt estimates and recommendations, write Johns-Manville, Box 290, New York 16, N. Y.



Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING
AND GASKET FOR EVERY SERVICE.

When inquiring check CP 5179 on handy form, pgs. 2-3

Make every foot of STAINLESS STEEL TUBING count...



FREE BOOKLET TELLS YOU HOW...

You're using stainless steel tubing because it does important things better for your equipment or your products . . . or does something no other metal can do. Make sure you're using *all* its good properties to their best advantages.

Send for the 28-page bulletin "Republic Electrunite Enduro Stainless Steel Tubing." It is a guide, in these days of short supply, to the selection of the best available stainless alloy, how to design with it, how to fabricate it. Address:

REPUBLIC STEEL CORPORATION
STEEL & TUBES DIVISION
224 EAST 131st ST. • CLEVELAND 8, OHIO



ELECTRUNITE®

STAINLESS STEEL TUBING AND PIPE

When inquiring check CP 5180 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

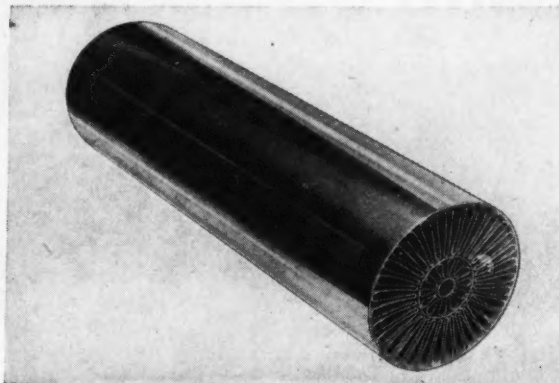
High rate of heat transfer achieved by tube design . . .

one or two finned annular spaces available in tubes in finned lengths up to 10'

Uses: Designed for a high rate of heat transfer of liquid and gases.

Features: Maximum heat transfer with minimum pressure drop. Saves space.

Description: Available with one or two finned annular spaces, with outer tubes ranging from 5/8 to 2 1/8" and inner tubes 1/4 to 3/4".



Longitudinal fin tube saves space

Standard tubes are of copper with copper or aluminum fins. Tubes made in finned lengths up to 10' in 6" increments.

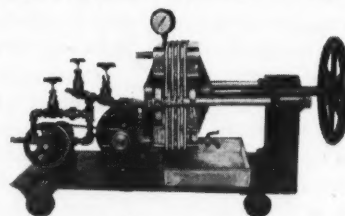
Source: Heat-X longitudinal fin tubes are made by Heat-X-Changer Co., Dept. CP, Brewster, N. Y. . . . or for more information check CP 5181 on handy form, pages 2 and 3.

Filtering medium acts as gasket, eliminates use of washers . . .

pump can be used independently of the filter for transferring liquids from one container to another

Uses: For fine filtration, clarification, or polishing of drug, chemical, or cosmetic preparations.

Features: Filter is of the inside eye type in which the pads or other filter media act as the sealing gaskets, thus eliminating the use of rubber washers and permitting higher operating pressures. Design also provides positive internal sealing of the filter medium and eliminates any bypassing of unfiltered liquid.



Filter has frame 10" square from one container to another. Pumping capacity is two to three gpm.

Description: Pad filter has a 10" square frame, can be operated with 4 to 8 pads. Self-priming rotary gear pumps, driven with V-belts, are standard with all units. Filter can be used with any type of filter medium such as asbestos, paper or cloth.

Each pad is an independent element. When pads become

Pumps are arranged so that they can be used independently of the filter for transferring liquids

How to save Labor and Money by Centralizing Lubrication

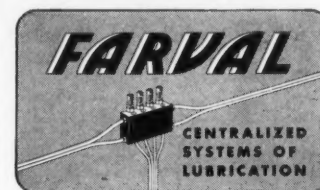
FOR more than 20 years, Farval has been saving manpower and money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Bulletin 25 gives you the facts and figures to apply to your own lubrication problems. The Farval Corporation, 3257 East 80th St., Cleveland 4, Ohio.

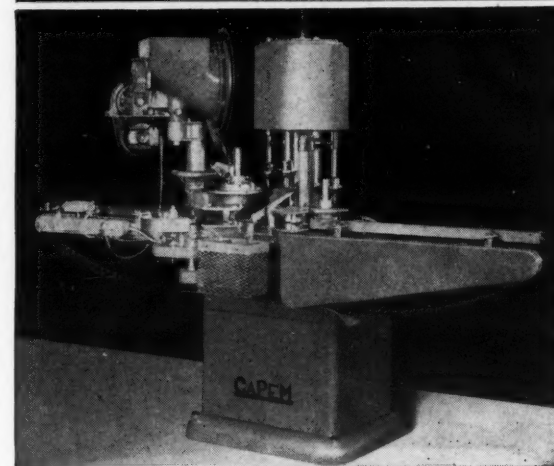


Write for **FREE**
Bulletin 25



When inquiring check CP 5182 on handy form, pgs. 2-3

CAPEM...more in use than any other make of capper



Applies all types of screw caps... Provides a leakproof seal at low cost...
... Five models with speeds ranging from 2,000 to 10,000 an hour.

Write for information and prices

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO 13, N. Y.

When inquiring check CP 5183 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

plugged with solids they can be replaced and the filter can be readied for operation again in 5 to 10 minutes.

Standard filters are constructed of nickel plated bronze castings. Stainless steel backing wire and perforated metal screens are used for the plates, and stainless steel is used for the main filter supporting rods. Filters can also be constructed of other materials, such as aluminum, stainless steel, etc. Machines are mounted on casters for mobility.

Source: F. R. Hormann & Co., Inc., Dept. CP, 17 Stone St., Newark 4, N. J. . . . or for more information check CP 5184 on handy form, pages 2 and 3.

Provides method for analyzing metal structure quickly . . .

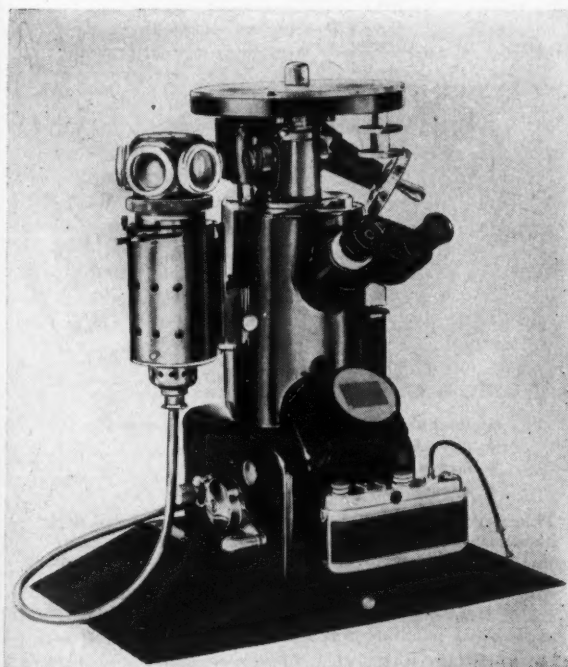
accessories extend usefulness of metallograph for research and routine testing

Uses: For making rapid, low-cost structural analyses of metal samples.

Features: Complete assortment of accessories makes use of metallograph extremely flexible. Facilities are provided for examination, study and photographic reproduction.

Description: OPL Metallograph occupies a table space less than 12 x 12". Overall height is 18". Controls are provided for fast, positive manipulation of all variables.

Technician can observe the sample through binoculars or on a ground glass screen without changing his position.



Metallograph can be used with 35 mm camera

Photographs can be taken on 35 mm roll film by merely swinging the image from the ground glass to the camera.

A large assortment of objective, ocular and projective lenses are provided. These are parfocal and parcentered, coated on all air-glass surfaces and corrected for infinity. Staging table is easily lifted for lens changes.

Source: F. T. Griswold Manufacturing Co., Dept. CP, Wayne, Pa. . . . or for more information check CP 5185 on handy form, pages 2 and 3.

JUNE, 1951

PRODUCTION gets a SHOT IN THE ARM with KINNEY VACUUM PUMPS

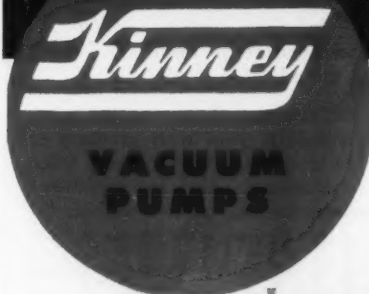
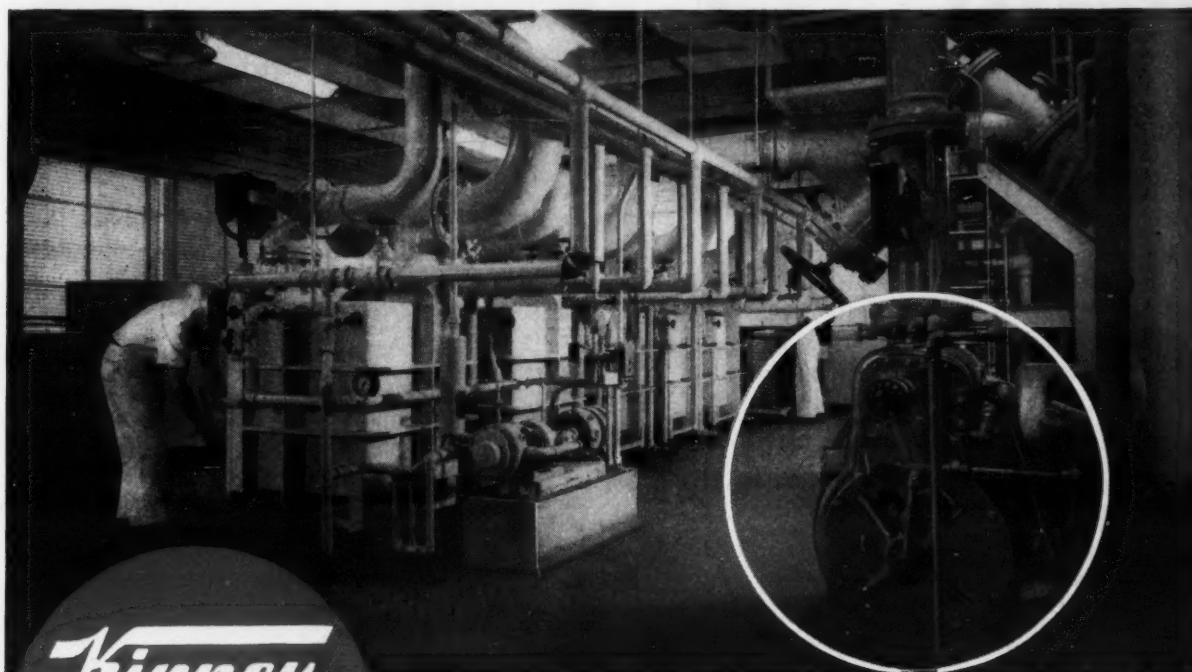


Here, at The Upjohn Company, Kalamazoo, Michigan, Kinney Vacuum Pumps produce low absolute pressures for freeze-drying penicillin. Here, as in countless other important process plants, vacuum . . . created by Kinney Pumps . . . is the "shot in the arm" that keeps production rolling dependably, smoothly, economically.

Wherever Kinney Pumps are at work—the laboratory, the pilot plant, or the production line—you can count on fast pump down plus complete reliability. It's this combination of speed and stamina which Kinney Pumps bring to industries the world over. Pumps are available in eight Single Stage Models (702 to 13 cu. ft. per min. — for low

absolute pressures to 10 microns or better), three Compound Models (46 to 4.9 cu. ft. per min. — for low absolute pressures to 0.5 micron or better). Return coupon today for complete details. KINNEY MANUFACTURING COMPANY, Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle.

FOREIGN REPRESENTATIVES: General Engineering Co. (Radcliffe) Ltd., Station Works, Bury Road, Radcliffe, Lancashire, England . . . Horrocks, Roxburgh Pty., Ltd., Melbourne, C. I. Australia . . . W. S. Thomas & Taylor Pty., Ltd., Johannesburg, Union of South Africa . . . Novelectric, Ltd., Zurich, Switzerland . . . C.I.R.E., Piazza Cavour 25, Rome, Italy.



KINNEY MANUFACTURING COMPANY
3573 Washington St., Boston 30, Mass.

Gentlemen:

Please send illustrated Bulletin V45. We are interested in:

- ☐ Vacuum exhausting ☐ Vacuum coating ☐ Vacuum distillation
☐ Vacuum metallurgy ☐ Vacuum dehydration

Name.....Company.....

Address.....

City.....State.....

SEND • COUPON • TODAY

When inquiring check CP 5186 on handy form, pages 2-3



CONVEY BULK MATERIALS FAST

● Exclusive Ajax Lo-Veyor design answers processing and production requirements in chemical plants because:—

- 1 Only three basic parts...pan or tube... enclosed vibrating drive...motor.
- 2 Open or closed pan models combine convenience and eliminate contamination.
- 3 Tubular models reduce explosion hazards.
- 4 Unaffected by abrasive conditions,—no exposed bearings or eccentrics.
- 5 Self-contained,—low installation and maintenance cost.

Used by foremost chemical, food and other manufacturers. Write giving outline and sketch of your requirements.

**AJAX FLEXIBLE
COUPLING COMPANY INC.
WESTFIELD, N. Y.**

When inquiring check CP 5187 on handy form, pgs. 2-3

Page 118

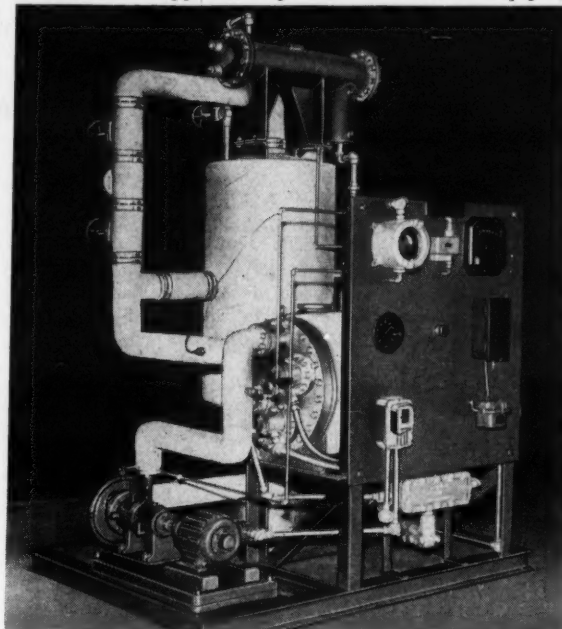
PROCESSING EQUIPMENT

**Dowtherm, other liquids
heated electrically
for heat transfer . . .**

units are supplied complete, ready for immediate use

Uses: Electrically heated Dowtherm heat transfer units have capacities ranging from 100,000 to 500,000 Btu/hr. Temperatures range to about 750°F using Dowtherm as a liquid or vapor medium. Other heat transfer fluids can be used.

Features: Supplied complete with instruments, piping,



Electrically heated Dowtherm heat transfer unit

insulation, and other accessories, units are ready for immediate operation.

Description: Entire unit may be base mounted at the factory or supplied with all essential equipment for individual's own mounting. Maker's Bulletin B-45 describes this equipment in detail.

Source: Development of the Struthers Wells Corporation, Dept. CP, Warren, Pa. . . or for more information check CP 5188 on handy form, pages 2 and 3.

**Heating air in fin-type units
avoids contamination from
products of combustion . . .**

heat quickly up to temperature of 1600° F; floor or overhead mounting; use oil, gas

Uses: Designed to heat air, special atmospheres, gases or liquids without contaminating them with products of combustion. Used to insure control of processing when air is used in drying applications. Also for preheating furnaces and wherever clean, hot air, gases or liquids are required.

Features: Heaters can be controlled accurately within very close limits. Start quickly and possess high fuel and thermal efficiency.

Description: Heaters consist of a stainless steel outer shell with expansion section, and an Inconel center tube with integrally welded extended surface fins. There are



This Spencer Portable Vacuum Cleaner has 30 times the cleaning power of an ordinary home type machine. The dirt can hold 7½ cubic feet of rubbish—and is removed by a foot lever and rolled on casters to the point of disposal. It's built for big business and uses standard Spencer Vacuum tools.

This is the type used by plants having up to 500 acres of floor space to clean every night or tons of metal to pick up and reclaim or bulky raw products to convey. Portable sizes from 1½ to 15 HP. Stationary units to 100 HP. Ask for Bulletin No. 125-D.

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT

SPENCER
HARTFORD

439-D

When inquiring check CP 5189 on handy form, pgs. 2-3



- ★ Mechanizes handling in hazardous areas
- ★ Reduces man-hours for handling
- ★ Increases storage capacity
- ★ Speeds loading and unloading

This Baker Electric Fork Truck is the only mechanized handling equipment permitted to operate in the oil storage house of this company, where it saves time and space by handling and tiering drums of flammable material. Whatever your truck handling problem, efficient, safe Baker Trucks can bring you the cost-saving benefits of mechanized handling throughout all your departments.

TODAY MORE THAN EVER— Manpower savings and more efficient use of storage space are of prime importance. Baker Fork Trucks can often eliminate the need for new construction. Let us show you how.

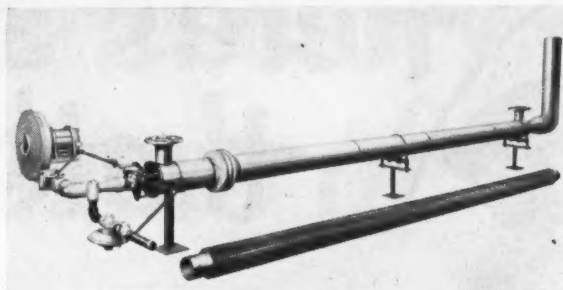
BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
1208 WEST 80th STREET • CLEVELAND 2, OHIO

Baker INDUSTRIAL TRUCKS

When inquiring check CP 5190 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT



Heats air, gases, liquids for processing applications

no refractories to heat; consequently, units can be put on full steam in just a few minutes. They are easily installed on floor or in overhead and other waste space. Furnished complete, including burner, fan and all equipment for oil or gas operation.

Source: Brown Fintube Co., Dept. CP, Elyria, Ohio. . . or for more information check CP 5191 on handy form, pages 2 and 3.

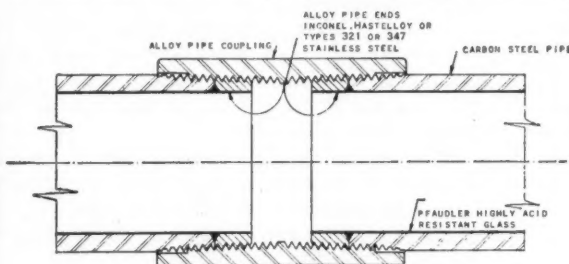
Alloy couplings can be used with special joint for glass lined pipe . . .

preserves inherent corrosion resistance of glass lined Van Stone flanged pipe

Uses: Joining glass lined pipe for highly corrosive service. May be used instead of the common Van Stone flange.

Features: Joint permits use of alloy pipe couplings while preserving the inherent corrosion resistance of glass lined flanged pipe.

Description: The "Glassalloy" joint is shown in drawing. Two short alloy rings are welded to ends of length of low carbon steel tubing. Glass lining is applied through the length of pipe by conventional means, but it terminates at either end on the alloy ring. Following this lining



Sectional view of Glassalloy joint for glass lined pipe

operation, pipe is threaded with standard dies and may be connected by alloy fittings. Alloys thus far available for the terminal rings are Hastelloy C, Inconel, Type 347 stainless steel, and the extra low carbon grades of Types 304 and 316. Pipe fittings may be of these or other alloys which possess adequate resistance to corrosion by the product.

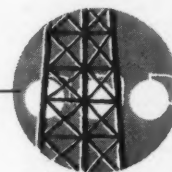
Thus far, Glassalloy construction is available in 2, 2½ and 3" pipe sizes in lengths to 10', and 1½" in shorter lengths. It is probable that greater diameters and lengths will eventually be available.

Source: The Pfaudler Company, Dept. CP, Rochester 3, N. Y. . . . or for more information check CP 5192 on handy form, pages 2 and 3.



where stainless steel tubing

is required —



TRY TRENTWELD

Stock lines in food, paper, and chemical plants; heat exchanger units in processing industries; cooling coils in breweries, beverage industry, dairies and dairy equipment . . . throughout all industry, wherever there's a stainless or high alloy tubing application, there you'll find TRENTWELD.

And it's to be expected! TRENTWELD is made in a tube mill by tube engineers who roll and weld stainless and high alloy tubing *exclusively*. Then too, TRENTWELD is available in a full range of sizes — ⅛" to 36" in diameter. This coupled with Trent's convenient mid-continent location means prompt delivery of what you want . . . when you want it. If yours is a stainless or high alloy tubing requirement: Call on us. TRENT TUBE COMPANY, *Subsidiary of Crucible Steel Company of America*. General offices and plant: East Troy, Wisconsin; Sales offices in principal cities.

TRENTWELD

STAINLESS STEEL TUBING

When inquiring check CP 5193 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Applications in calendering for adjustable-speed drives

Eight-page bulletin deals with adjustable-speed drives for calendering rubber, plastics, and similar materials. Illustrated with 19 photographs and a series of charts and diagrams, it outlines uses and advantages of the electronically regulated drives. Contents include dimensions and horsepower ratings. GEA-5588 is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 5194 on handy form, pages 2 and 3.

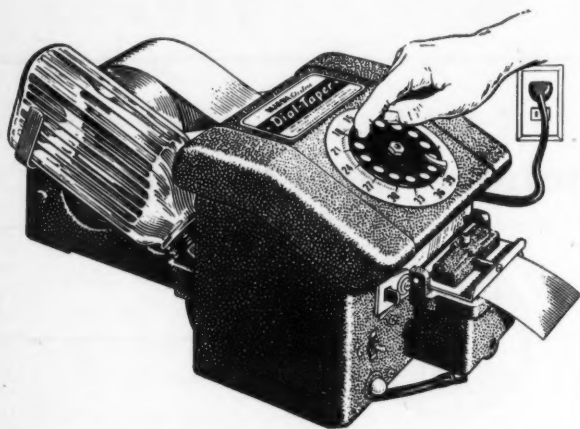
Simply twirl "telephone" dial for measured length of moist gummed tape . . .

dispenser has accurate cut-off and built-in water heater

Uses: For dispensing gummed tape in measured lengths.

Features: Operator simply dials the tape length desired. No tape is wasted, there is no over-shooting.

Description: Electrically operated machine automatically dispenses accurately measured tape that has been moistened with warm water. A quick pass of the hands is then



Dispenser has finger tip control

sufficient to make a good seal between tape and carton. Water heater is built-in.

Unit is 21 x 9 x 10", takes tape 1 to 3" in width in rolls up to 9" in diameter. Adjustment can be made at the factory if it is to be used with cloth or filament inserted tapes.

Source: Dial-Taper is a product of the Marsh Stencil Machine Co., Dept. CP, Belleville, Ill. . . . or for more information check CP 5195 on handy form, pages 2 and 3.

Common support, single drive shaft give tandem-mounted screens vibrationless operation . . .

heads rotate in same direction; separations are clean, accurate in handling powders, etc.

Uses: For screening such materials as soap and metal powders, sawdusts, and meals.

Features: Design embodies two screens compactly assembled on a common support and driven by a single motor. This virtually eliminates all vibration, permitting screens to be installed in towers or in sections of buildings not rigidly supported. A single drive shaft powers the



○ for light weight

○ for insulation at very high temperatures

If light weight—or good insulation at very high temperatures—interest you, here's a material worth knowing about. ALFRAX BI aluminum oxide refractory is literally made of bubbles.

Aluminum oxide, as you know, is inherently capable of withstanding very high temperatures—well over 3000° F. We make hollow spheres of Al_2O_3 , specially bond them together, and get a finished refractory that has low heat capacity, good load strength, and is one of the best insulating materials available for high temperature jobs. And, a nine inch straight ALFRAX BI brick weighs only 4.8 lbs.

These unusual properties have made ALFRAX BI refractories ideal for such diverse applications as: Linings for chemical process kettle settings; Arches for aluminum reverberatory furnaces; Backing-up linings for synthesis gas generators; Arches and side-

walls for ceramic kilns. The one common denominator in each case being high heat — usually above 2600° F. (At lower temperatures, standard materials may prove adequate.)

Do any of these applications strike a responsive chord—perhaps where closer heat control is indicated? . . . or where a reduction in overall lining thickness would pay off? . . . or where a low heat capacity lining is desired?

Whatever your needs, bear in mind that ALFRAX BI refractory is only one of many Super Refractories by CARBORUNDUM — each of which (see box, opposite page) has unique properties ideally suited to certain applications.

Information is now available on all these Super Refractories. So send today for our valuable new booklet. No obligation, of course.



THE CARBORUNDUM COMPANY

Refractories Division

Perth Amboy, New Jersey

"Carborundum," "Carbofrax," "Mono{rax}" and "Al{rax}" are registered trademarks which indicate manufacture by The Carborundum Company.

a refractory material s made of bubbles!

SUPER REFRACTORIES ARE ALSO USED

WHERE ABRASION OR EROSION IS SEVERE. Two Super Refractories—CARBOFRAX silicon carbide material and MONOFRAX K fused cast material—are within one index point of diamond hardness! As a result, both are exceptionally resistant to abrasion, either at room temperature or high heat.

WHERE HEAT CONDUCTIVITY IS NEEDED. At elevated temperatures CARBOFRAX refractories conduct heat as rapidly as chrome-nickel steels! This characteristic is invaluable in checkers, muffles, hearths, etc.

WHERE CHEMICAL ATTACK IS LIKELY. In general, all Super Refractories are either neutral or acid in nature—are widely used where chemical inertness is important.

WHERE STRENGTH IS IMPORTANT. No commercial tonnage refractories have greater strength than Super Refractories. All can withstand over 300 psi at 2750° F without crushing.

WHERE HIGH HEAT IS INVOLVED. They can be safely used at temperatures over 3000°F. They are very durable—are highly resistant to spalling and cracking. Some varieties are almost indispensable where flame impingement or violent temperature changes are present.

WHERE SPECIAL SHAPES ARE INDICATED. Practically all Super Refractories are available either as bricks or special shapes molded to close tolerances—including fitted joints, tubes, etc.

Do any of these suggest possible applications?

The important thing about Super Refractories by CARBORUNDUM is NOT just that they are "better" than standard fireclay refractories. The important thing is that they are actually a *class apart*—with many entirely different properties and applications. (For example, some of their properties—such as abrasion resistance—are important regardless of whether high temperatures are involved.)

Nor is their principal value simply that they cure trouble-spots where other materials (e.g., refractories, metals, etc.) fail to stand up. Their value usually lies in increasing capacity and re-

ducing overall operating costs. (For example, regenerator checkers made of CARBOFRAX silicon carbide brick absorb and release over 3 times as much heat as checkers made of ordinary refractories when cycles are short.)

WHY NOT CHECK UP? We have a new booklet which outlines the unusual characteristics of these special purpose materials. The coupon will bring you the story—or one of our engineers will be happy to talk over your specific problems. We believe it could be mutually profitable.

This advertisement—one of a series—is presented in the belief that in the unusual properties of the various Super Refractories by CARBORUNDUM lies the key to many new or improved processes. We would like to talk over specific jobs with anyone who sees such possibilities.

Dept. S-61
Refractories Div., The Carborundum Co.
Perth Amboy, New Jersey

Please send your free booklet on properties of Super Refractories.

Name

Position

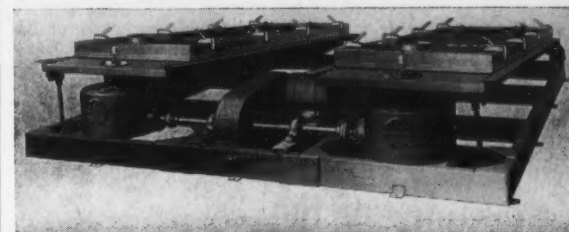
Company

Street

City Zone State

When inquiring check CP 5196 on handy form, pgs. 2-3

PROCESSING EQUIPMENT



Tandem-mounted gyrating screens

two eccentric drive heads so that the heads rotate in the same direction.

Description: Large production unit shown, as well as smaller units, double production obtained by maker's individual screens.

Source: Patterson Foundry & Machine Co., Dept. CP, East Liverpool, Ohio. . . or for more information check CP 5197 on handy form, pages 2 and 3.

Interchangeability featured in one-piece plastic lens of safety goggles . . .

lenses are optically correct, and goggles are built for comfortable wearing over prescription glasses

Uses: Safety goggles for protecting eyes against acid splashes, dusts, and flying objects.

Features: Lenses are optically correct and made of one-piece plastic, interchangeable with other types of lenses.

Description: Frame is molded of plastic which remains pliable at normal temperatures, effecting tight seal against face. Available with regular vents for general use; with



Picture at left shows interchangeable lens being removed from safety goggle

screened vents for protection against splashes and dust; or with no vents for protection from fumes. Goggles can be worn over prescription glasses.

Source: United States Safety Service Co., Dept. CP, 1215 McGee St., Kansas City 6, Mo. . . or for more information check CP 5198 on handy form, pages 2 and 3.

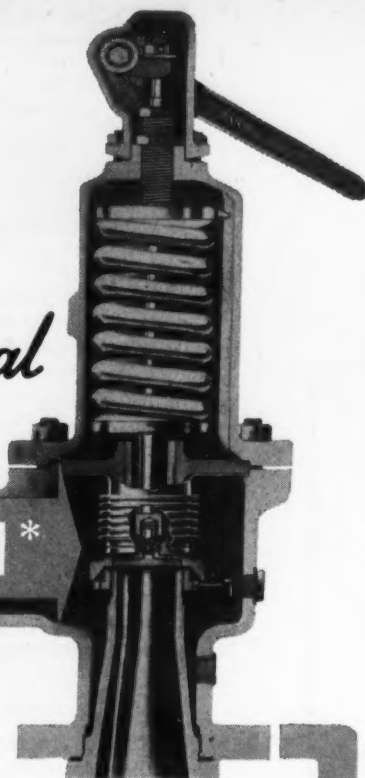
Ionizer reduces paint used in spraying applications

Four-page, 2-color bulletin describes paint spray accessory that ionizes the spray in mid-air. Its use reportedly reduces waste of paint from 50% to 95%. Added feature is that spray will tend to reach around corners. Contents of bulletin include application photographs and specifications. "Paint Miser" is issued by Ashdee Products, Inc., Dept. CP, 18029 Dixie Highway, Homewood, Ill. When inquiring specify CP 5199 on handy form, pages 2 and 3.

meet the
newest
member
of the
FarriSeal
family

BalanSeal*

IT SAVED \$75,000 IN
PIPING WITH A \$5,000
VALVE INVESTMENT**



Pioneered by Farris Engineering Corp., embodying advanced engineering technics, and *absolutely unique*—although it is now being imitated—the patented BalanSeal is ideally suited for use wherever a collecting system is required for a series of safety-relief valves. It permits a higher downstream pressure—and consequently, smaller piping. Yes! The cost of a BalanSeal valve installation is a mere fraction of the savings effected in down-stream piping. (**In one case, a cost reduction of \$75,000 resulted from a \$5,000 investment in BalanSeal Valves.)

In BalanSeal, the sole force opposing the opening of the valve is the spring. Downstream back pressure, static or surge, cannot act on the disc and has absolutely no effect on the relieving point.

BalanSeal is the ultimate in safety-relief valve design and construction. The bellows, which also distinguishes the FarriSeal design, is so proportioned as to eliminate any unbalanced forces on the valve disc—which is perfectly balanced on its seat at the set pressure. Like all other FarriSeal Valves, perfect protection is provided for guide, stem and spring by completely isolating these parts from the lading fluid.

Get the facts on the revolutionary BalanSeal Safety Relief Valve. Find out how you can cut installation costs to the bone, step up operating profits. Write for Bulletin No. 52B—it will pay off in ASSURED safety and installation economy.

Farris

SAFETY and RELIEF VALVES

FARRIS ENGINEERING CORP.

406 Commercial Avenue Palisades Park, N. J.

*Patented and
Patents Pending

7676

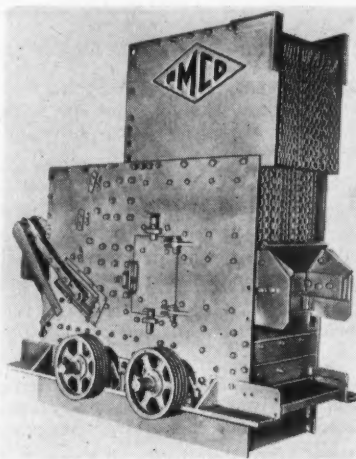
PROCESSING EQUIPMENT

**Conformity of aggregate is result
of precise control of
impact action . . .**

breaker produces a desired percentage within the limits of any given sizes; only 2 moving parts

Uses: Especially suited for production of aggregates for concrete construction; reduces many types of non-abrasive and low silica content materials; also limestone flux and a variety of bulk raw materials in chemical processing and mining industries. When used as a primary breaker in the production of agricultural aglimes and phosphates, equipment may be adjusted to produce a high percentage of finished material, keeping secondary crushing loads to a minimum.

Features: Method of controlling breaking action and directing flow of materials through machine produces a highly uniform gradation cubical aggregate. Extremely high ratio of reduction, low hp per ton of finished material, easy access to all parts. Only two moving parts, rotor hammers. With controlled impact action, practically all reduction is accomplished by the rotor hammers. Three adjustments control product size and make it possible to produce a desired percentage within limits of any given size.



Breaker's ratio ranges from 32-1 to 40-1

Both rotor hammers rotate in the same direction, toward rear of machine, promoting fast feeding and keeping all material flowing toward the discharge for greater capacity. No grates, screens or bars seal discharge opening, permitting free discharge of material.

Description: Breaker consists of an outer plate steel housing forming a breaker chamber over two rotor hammer members, which are mounted in base. Rotors have three rigidly supported hammers each, and rotate on heat treated alloy steel shafts mounted on anti-friction bearings. Both hammers rotate at speeds of 550 to 1,000 rpm.

Size of finished material is governed by speed of rotors and by adjustment of a stripper bar and lower screen grate, both of which are protected from damage by tramp iron with automatic return spring-loading safety devices.

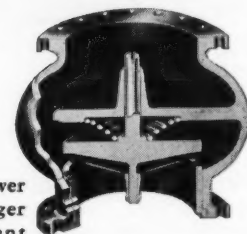
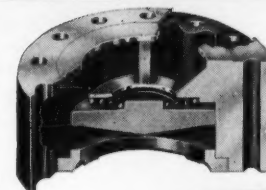
Shafts extend through both sides of machine and rotors may be driven from either side. As rotors rotate in same direction no complicated drives are necessary. Gasoline, diesel and electric power may be used.

Model 3240 breaker has a ratio of reduction between 32-1 and 40-1. It will take material up to 50" long that will pass freely through a 32 x 40" opening. This unit has a capacity of 250 tons per hour of 2 1/2" minus in average limestone with 125 to 150 hp. Other models are available with capacities of up to 500 tons per hour.

Source: Pettibone Mulliken Corp., Dept. CP, 4700 West Division St., Chicago 51, Ill. . . . or for more information check CP 5201 on handy form, pages 2 and 3.



WILLIAMS-HAGER
flanged
Silent check
VALVES



Wherever Williams-Hager flanged Silent Check Valves are installed, plant maintenance men will tell you their costly water hammer troubles are over. These dependable, durable and compact valves can be placed in your water system in any position, including angular, and will provide maximum protection at all times. They are available for every service in standard pipe sizes from 1" to 20". Why not rid your plant of water hammer now . . . get Williams-Hager Check Valves.

Write today for Bulletin WH-100.

CHECK VALVES

THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge
Cocks . . . Steam Traps . . . Pump Governors
. . . Feed Water Regulators . . . Water Columns

3015 PENNSYLVANIA AVE. • PITTSBURGH 33, PA.

When inquiring check CP 5202
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 5200 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Controls and protects small motors . . .

manual starter features trip-free overload protection

Uses: Manual starter designed to control and protect single phase AC and DC motors of 1 hp or less.

Features: Rugged double-break mechanism has quick make and break action. Contact tips are fine silver. Starter incorporates trip-free overload protection which provides a definite trip indication. Interchangeable overload relay units are accessible from front.

Description: Both single and double pole devices are available. Line and load terminals are arranged for straight-through wiring.

In addition to the open type starter, three others are offered: general pur-



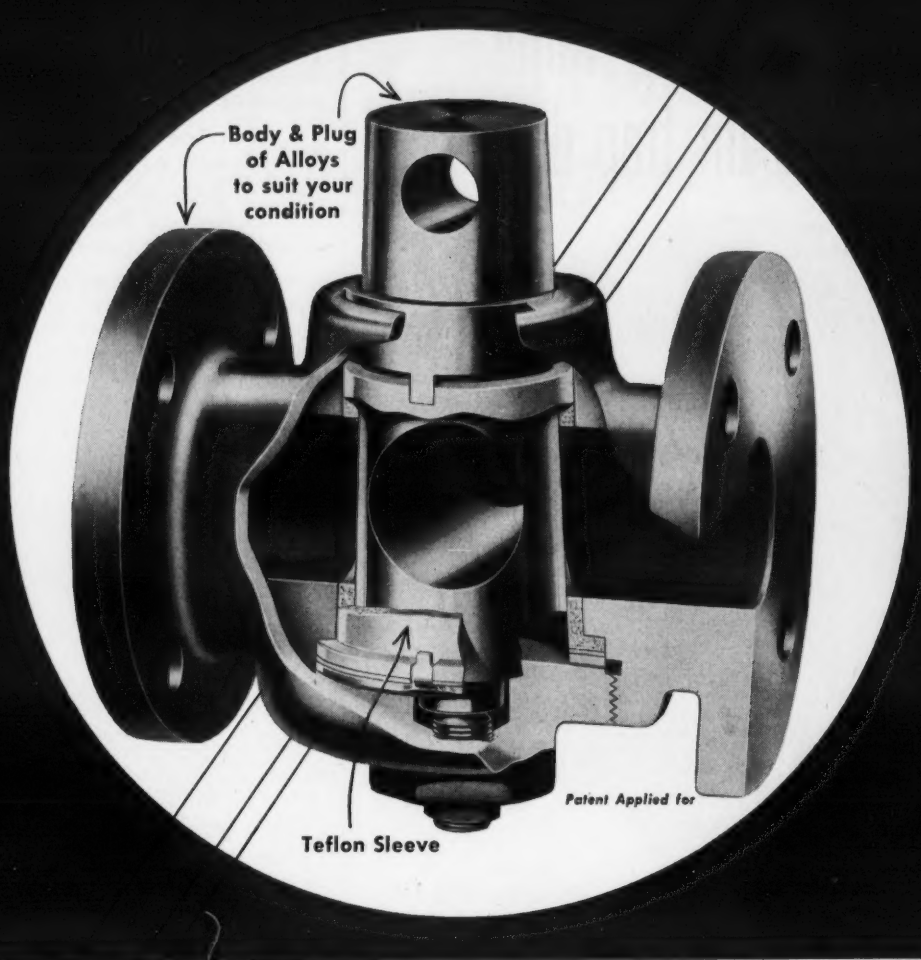
Motor starter

pose (NEMA I), water and dust tight (NEMA IV and V), and explosion resistant (NEMA VII and IX). The general purpose enclosure is die cast aluminum and can be supplied with pilot light for 115 and 230 volt operation without increasing overall dimensions. Water and dust tight enclosures can also be supplied with pilot light.

Standard switch box and flush plate can be used with open type.

Source: The Class 2510 Type A fractional horsepower manual starter is made by Square D Company, Dept. CP, 4041 Richards St., Milwaukee 12, Wis. . . . or for more information check CP 5203 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5204 . . . see information request blank between pages 2-3.



**designed for tough chemical service
non-lubricated, simple,
rugged, and proved.
Install it, forget it.**

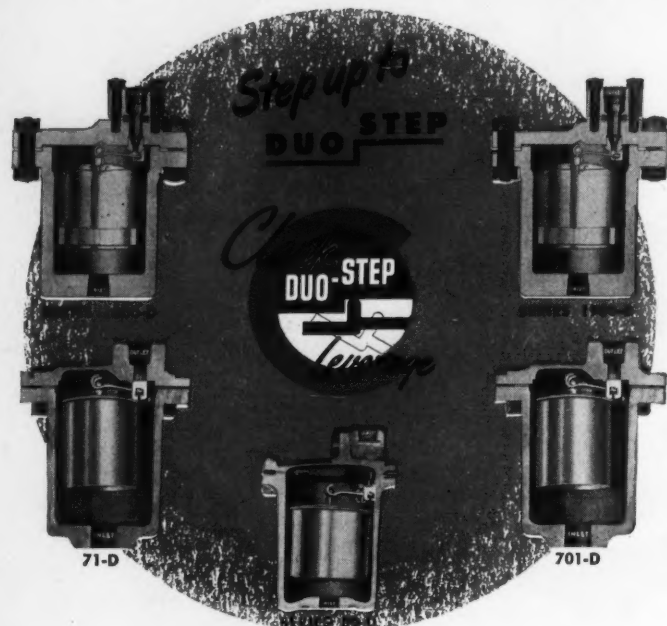
the new  **Type F Plug Valve**

If you haven't already received your copy, let us send you Bulletin 647 with data on materials of construction, corrosion resistance, construction and operating details, sizes and dimensions.

THE DURIRON COMPANY, INC.
Box 1019 • Dayton 1, Ohio



Get **TWICE** the value
for your steam trap dollar!



Just as the self-starter revolutionized the automobile, so Clark Duo-Step Leverage is changing old-fashioned ideas about steam trap efficiency.

Field and laboratory tests prove that Clark DUO-STEP Steam Traps more than *double* the drainage capacity of ordinary inverted bucket traps.

Ask your Clark representative for a demonstration on your steam lines—or write us for complete information.

Here's how DUO-STEP
doubles drainage capacity



THE CLARK MANUFACTURING COMPANY
1848 East 38th St. • Cleveland 14, Ohio



The complete line of dependable fluid controls

When inquiring check CP 5205 on handy form, pgs. 2-3

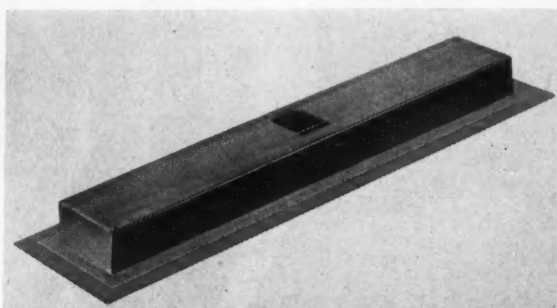
PROCESSING EQUIPMENT

**Protection of product, equipment
achieved with sanitary type
magnetic separators . . .**

remove metals from chute and belt-conveyed bulk materials; exposed surfaces are stainless

Uses: Designed to remove ferrous metal from chute and belt-conveyed products where absolute sanitation is required to protect both machinery and product purity.

Features: Made especially for applications where sanitary features are essential, such as in those where products processed are for human consumption. All-welded steel case is completely free of crevices and sharp corners which might collect bacteria. Being waterproof, plate may be



Separator has all-welded stainless case

hosed down and scoured without effect on its operation. Plates are so constructed that all exposed surfaces are of stainless steel and are sealed liquid-tight.

Description: Plates are designed without mounting studs or holes, and are tin-soldered in place for completely sanitary installation. Highest grade Alnico magnets are used. Three models — standard, heavy-duty, and high-intensity — cover range of materials to be processed and nature of contamination encountered. Plates in any model are available in widths from 4 to 48".

Plates may be suspended above conveyor belts or mounted in bottom of chutes. Height of installation when suspended and depth of material flow over chute-mounted plate are determined by model used.

Source: Cesco Type 11 sanitary permanent magnetic plates are made by Columbia Engineering Service Co., Dept. CP, 173 14th St., San Francisco 3, Calif. . . . or for more information check CP 5206 on handy form, pages 2 and 3.

**Capacities to 4000 gpm
credited to line of
2-stage pumps . . .**

heads range up to 750 feet, discharge sizes range from 2 to 10 inches

Uses: Two-stage pumps are made in sizes from 2 to 10", discharge, with capacities up to 4000 gpm, and heads up to 750'. Recommended for services such as building water supply, hydraulic elevators, boiler feeding, etc.

Features: Two-stage unit driven by one motor is said to produce as much head as two single-stage pumps piped in series.

Description: "DMD" pump has a horizontally split casing with interconnecting passage between two opposed impellers. Impellers are non-overloading type, hydraulically and dynamically balanced at the factory. Large

BOWEN EQUIPMENT AND SERVICES COVER ENTIRE SPRAY DRYING FIELD

1. Extensive Test Facilities

Bowen laboratories can run tests on gallon lots or on market-sampling tonnage.

2. Laboratory Spray Dryers

In daily use in over 100 laboratories. Also used for valuable and rare product small lot production. Minimum space requirements 3' x 6'.

3. Pilot Spray Dryers

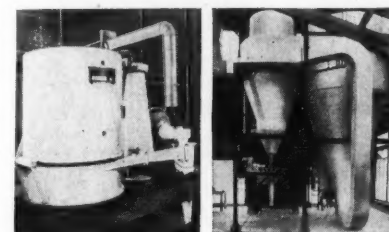
Low cost factory preassembled units for moderate production of three to seven tons of product per day.

4. Package Production Units

Production output of five to twenty tons per day from prefabricated units of mild steel or stainless steel construction.

5. High Tonnage Spray Dryers

Built to meet special requirements of product. Critically designed for highest output consistent with lowest operating costs.



LABORATORY UNIT

PACKAGE UNIT

● Bowen experience is based on 25 years of concentrated test work and research in the spray drying field. Our research engineers will be glad to show you how spray drying might improve your product at lower cost in Bowen patented spray dryers. Illustrated literature is available on all Bowen Spray Drying Units.

BOWEN ENGINEERING, INC.

NORTH BRANCH 1
NEW JERSEY

Recognized Leader in
Spray Dryer Engineering
... Since 1926



SPRAY DRYERS • EVAPORATORS • DUST COLLECTORS

When inquiring check CP 5207
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

diameter shaft is carried on heavy duty cartridge-type dust proof ball bearings. For thrust, an angular contact duplex bearing is used. Radial load is supported by a double row ball bearing.

DMD pump bulletin carries design and construction features, as well as performance data.

Source: Development of Economy Pumps, Inc., Dept. CP, Hamilton, Ohio . . . or for more information check CP 5208 on handy form, pages 2 and 3.

Dusts bearing fumes, vapors, odors collected, discharged to outdoors . . .

completely self-contained collector installed easily to prevent contamination of work areas

Uses: Especially suitable for applications involving remotely located dust sources having toxic fumes, vapors and obnoxious odors. Serviceable in installations of buffing, polishing and grinding wheels up to 10" diameter, or two smaller wheels. Sanding operations with belt or



Bantam filterless dust collector rating is 437 cfm

disc sander on rubber or synthetic rubber are also recommended uses.

Features: Although occupying floor space of but 12 x 23", unit develops a rated 437 cfm and 5,000 fpm velocity at inlet. It is completely self-contained.

Description: Motor is 1/3 hp, 3,600 rpm continuous duty. It is used as direct drive for a paddle wheel fan. Dust laden air carrying shavings, chips, dust, dirt, along with obnoxious odors and toxic fumes are sent into the cyclone separator. Here, all the material is removed from the air stream except the toxic odors, fumes and extremely fine dusts, which are exhausted to the outdoors through the outlet at the top of the cyclone. Ordinary sheet metal pipe may be used to complete that part of the installation. Unit is available with optional inlets as follows: single 4", single 3", double 3". Motor operates on 110 volts, single phase, 60 cycle. Units are also made for operation on 220 or 440 volts, 3 phase, 60 cycle ac.

Source: #4N20 dust collector is built by Agat-Detroit Co., Dept. CP, Ann Arbor, Mich. . . . or for more information check CP 5209 on handy form, pages 2 and 3.

JUNE, 1951

PITT CHEM Protective Coatings

Safeguard Industry Against Corrosion



"Industry's Most Comprehensive
Family of
Protective Coatings"



Protective Coatings Division

**PITTSBURGH
COKE & CHEMICAL CO.**

Serving the Nation with Basic Products for Industry and Agriculture

WAD 3860 C

GRANT BUILDING
PITTSBURGH 19, PA.

OFFICES: NEW YORK • CHICAGO • ST. LOUIS • TULSA • HOUSTON • LOS ANGELES • SAN FRANCISCO

When inquiring check CP 5210 on handy form, pgs. 2-3

SAYS

STOP TO SOLIDS

Yarway
Fine Screen Strainers
prevent rust,
scale and dirt from
clogging
mechanical equipment.
Screens of woven
Monel wire, bodies and
screen caps
cadmium plated. Made in
10 sizes 1/4 to 3"
Sold by 216 industrial distributors.
Write for Bulletin S-203.

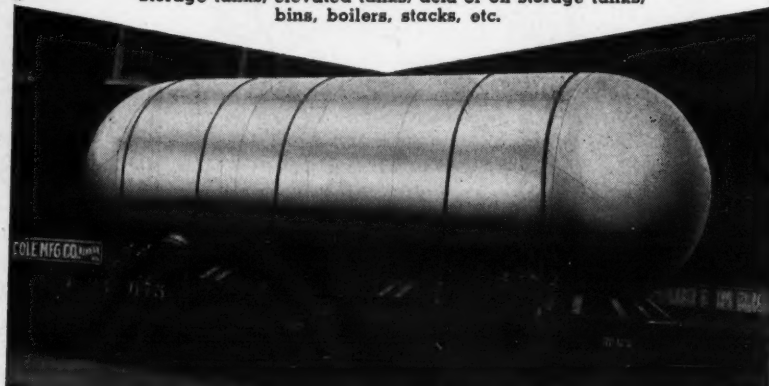
YARNALL-WARING COMPANY
125 Mermaid Ave., Philadelphia 18, Pa.

YARWAY STRAINERS

When inquiring check CP 5211 on handy form, pgs. 2-3

COLE ALUMINUM TANKS

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG. CO.
NEWNAN, GA. Established 1854



TANKS TOWERS CYLINDERS VESSELS

When inquiring check CP 5212 on handy form, pgs. 2-3

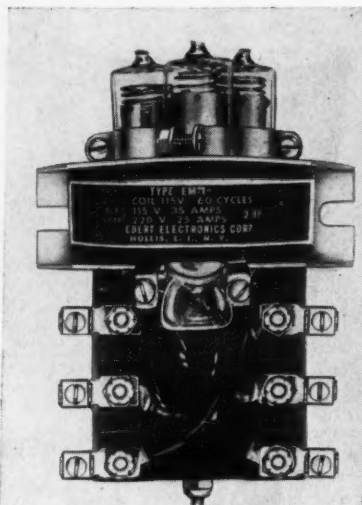
PROCESSING EQUIPMENT

**10,000,000 relay operations
without failure . . .**

mercury contact plunger relay is
addition to line

Uses: Relay for loads to 35 amp
at 115 volts ac, or 25 amp at 220 volts
ac, per contact.

Features: Test relays have with-
stood more than 10,000,000 opera-
tions without failure.



Description: Type Em-7 is a new
version of manufacturer's hermetically
sealed mercury contact plunger relays.
It has three poles and one coil. Tung-
sten contacts are hermetically sealed in
hydrogen filled glass tubes. Three
of manufacturer's standard Type EMT
tubes are used in one coil structure.

Relays can be supplied with all three
contacts either normally open or nor-
mally closed, or with any combination
of normally open and normally closed
contacts. Dimensions are 4-1/16"
wide, 5-3/8" high, and 3" deep.

Source: Manufactured by Ebert
Electronics Company, Dept. CP, 185-
09 Jamaica Ave., Hollis 7, L.I., N. Y.
. . . or for more information check
CP 5213 on handy form, pages 2 & 3.

**Holds constant flow
despite variations
in pressure . . .**

valve adjusts from closed position
to 25 gpm max.

Uses: As a compensated type flow
control valve maintaining constant
flow over a wide differential pressure
range. Adjustable from completely
shut-off position to 25 gpm maximum
flow.

Features: Will maintain constant
fluid flow, and constant machine feed,
over a wide range of pressures and

**1000 GALLONS
DEIONIZED WATER 18c***
(equivalent to distilled water)
*Based on 10 grain water

Elgin MonoFlo Delonizer

Brings the cost of demineralized water within the
range of those who have heretofore found evapo-
rated or distilled water prohibitive in cost. Here
is the perfect process water and feedwater.

The single column Elgin Delonizer produces
water of higher quality than delivered by two and
four-column demineralizers. In fact, for nearly all
purposes, the water is freer from impurities than
distilled water—and at a fraction of the cost. Natu-
rally the compact Elgin MonoFlo DeIonizer costs
far less to buy and operate. It requires but little
space—is simple in operation—cuts regeneration
time and rinse water requirements—and has other
notable Elgin features which makes it today's out-
standing deionizing equipment.

Write today for complete data

ELGIN SOFTENER CORPORATION

180 N. Grove Avenue, Elgin, Illinois

WATER CONDITIONING FOR EVERY NEED

When inquiring check CP 5214 on handy form, pgs. 2-3



Remove heat, fumes,
odors with
**ILG RAPID
AIR CHANGE**

Keep present employees on the job . . . attract new employees
. . . with good ventilation. Out with odors, fumes, steam, and
excess heat. In with fresh, invigorating air.

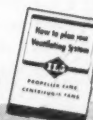
Extra-powerful, extra-quiet ILG Self-Cooled Motor Propeller
Fans can be quickly installed in wall, window or penthouse with
automatic shutter. Phone nearby Branch Office (consult classified
directory), or send inquiry card.

ILG ELECTRIC VENTILATING CO., CHICAGO 41, ILL.
2813 North Crawford Avenue
Offices in more than 40 Principal Cities

FREE! New 8-Page Bulletin No. 310



**VENTILATION
for rapid air change**



When inquiring check CP 5215 on handy form, pgs. 2-3

CHEMICAL PROCESSING

WET to DRY
IN 30 SECONDS

as simple as **ABC**

ZIZINIA
SPRAY DRYER

Lowest Cost
Easy Installation
Stainless Steel Construction
Design and Operating Simplicity
27 Years' Spray Drying Experience

Send for Bulletin

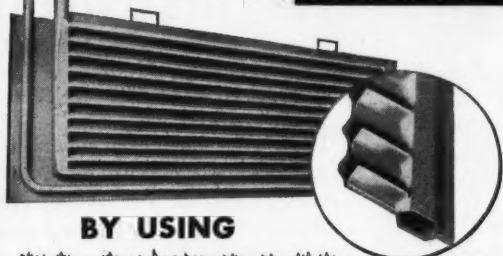
FOSTER D. SNELL, Inc.

CHEMISTS-ENGINEERS

29 W. 15TH ST., NEW YORK 11, N.Y.
PHONE WATKINS 4-8800

When inquiring check CP 5216 on handy form, pgs. 2-3

YOU SAVE **STEEL**
MANHOURS
MONEY



BY USING
PLATECOIL FOR
TANK HEATING AND COOLING

YOU SAVE CRITICAL STEEL because "Platecoils" require less than 1/2 the steel used in pipe coils of the same surface area. A 22" x 119" Platecoil weighs 95 lbs. against 239 lbs. for an equivalent 2" pipe coil. 144 lbs. steel saved. YOU SAVE CRITICAL MANHOURS because "Platecoils" are easily installed, cleaned or replaced in minutes . . . No down-time . . . No tank dumping. Many manhours saved. YOU SAVE MONEY because "Platecoils" cost up to 50% less in initial cost and require less maintenance. Investigate "Platecoils" today.

Send for complete
technical manual and
descriptive Bulletin No. P54

PLATECOIL
DIVISION
KOLD-HOLD MFG. CO.
LANSING 8, MICHIGAN

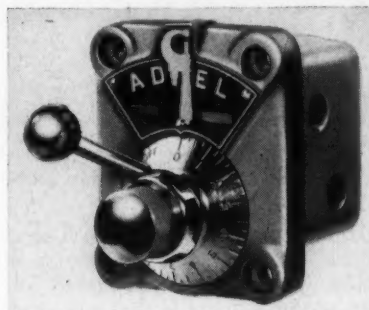
When inquiring check CP 5217 on handy form, pgs. 2-3

JUNE, 1951

PROCESSING EQUIPMENT

feed resistances. Constant flow is maintained regardless of variation in inlet and outlet pressure. No drain line is required. Wide range of control lever rotation (270°) permits extremely accurate flow settings.

Description: Maximum recommended inlet pressure is 1,500 psi.



Hydraulic flow control valve

Maximum recommended outlet pressure equals inlet pressure minus 100 psi.

Eight model variations are available: 3/8" pipe size — 2, 3, 4 and 6 gpm flow maximum . . . 3/4" pipe size — 10, 15, 20 and 25 gpm flow maximum.

Source: Adel Div. of General Metals Corp., Dept. CP, 10777 Van Owen St., Burbank, Calif. . . or for more information check CP 5218 on handy form, pages 2 and 3.

Pilot controlled valves use aluminum cover on solenoids . . .

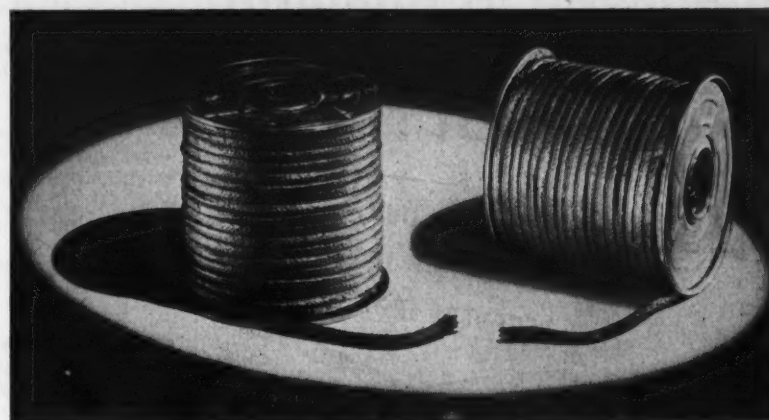
protect against explosion and fire hazards

Uses: For use on maker's electrically operated pilot controlled valves.

Description: Cover, which can be used wherever fire and explosion hazards exist, is manufactured of cast-aluminum to Underwriters' Laboratory specifications, Class I, Group D, Air Break Type.

Provision is made for standard conduit connection. The explosion-proof solenoid cover may be used with 1/4" to 1 1/4" size Ross pilot operated straight-way, three-way, four-way and four-way five port models for single solenoid operation; this housing may also be used for double solenoid, momentary operation of maker's base mounted pilot controlled valves.

Source: Ross Operating Valve Co., Dept. CP, 120 East Golden Gate, Detroit 3, Mich. . . or for more information check CP 5219 on handy form, pages 2 and 3.



EXTRUDED TEFLON PACKING

**A Chemical-Proof Field Maintenance
or Emergency Packing**

For valves, pumps, agitators, autoclaves, couplings or any other stuffing box application, Chemiseal #620EG (impregnated with graphite) or #620EM (with mica) extruded Teflon packing is ideal for field maintenance or emergency use where it is impractical to have preformed packing rings made to order. Like all Teflon-"Chemiseal" products, #620EG or EM can't be attacked by any organic or inorganic acid, alkali or solvent. #620 is serviceable from -150° F. to 550° F.

"Chemiseal" extruded Teflon packing differs from other shredded oriented Teflon packings in that no synthetic or rubber binders are used in its fabrication—such additives tend to harden and render the packing unserviceable. Lubrication of the packing is enhanced by use of a highly acid-refined, non-nitridable hydrocarbon which, while soluble in common solvents, is unaffected by aqueous solutions of inorganic acids or alkalis. However, Chemiseal #620 is definitely recommended for solvent applications as the lubricant is not essential for anti-friction purposes.

#620 Packing is supplied in coil form, in a loosely-woven cotton jacket. It is sold by the foot and is available in rectangular cross-section from 1/4" up by 1/16" increments. Send for Catalog Nos. 620EG and 620EM.

UNITED STATES GASKET CO.

618 N. 10th Street • CAMDEN, NEW JERSEY

When inquiring check CP 5220 on handy form, pgs. 2-3

INDUSTRY IS PROVING DAY "AC" DUST FILTERS



87% OF OUR
PRODUCTION IS FOR
REORDERS FROM...

FIRMS SUCH AS THESE:

Archer-Daniels-Midland Co.
Columbian Carbon Co.
General Mills, Inc.
The Glidden Co.
B. F. Goodrich Chemical Co.
The International Nickel Co., Inc.
Mallinckrodt Chemical Works
Minnesota Mining & Mfg. Co.
Monsanto Chemical Co.
Smith Kline & French
Laboratories
Southern Alkali Corp.
A. E. Staley Mfg. Co.
... and others.

LICENSED BY
H. J. HERSEY, JR.

THIS SUCCESS STORY SPEAKS FOR ITSELF

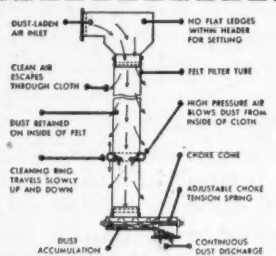
The soundness of the Day Type "AC" Dust Filter principle, effecting outstanding efficiency of operation with minimum maintenance, is verified by industry itself. 87% of our production of Day Type "AC" Dust Filters is channelled to meet the demands of users who are witnessing the results in their own plants—and reordering.

FEATURES OF THE DAY TYPE "AC" FILTER

- **CONTINUOUS-AUTOMATIC OPERATION**... the use of slow traveling, reverse jet cleaning rings gives automatic-continuous operation without shutdowns for cleaning.
- **CONSTANT AIR VOLUME**... the back pressure of DAY Dust Filters rises slightly when first started, then levels off to assure constant air volume.
- **PARALLEL AIR FLOW**... in the DAY Dust Filter, dust and air travel downward together.
- **HIGH AIR-TO-CLOTH RATIO**... 10, 15 or even 20 to 1 ratios maintained with uniform back pressures.
- **HIGH CLEANING EFFICIENCY**... with reverse jet cleaning, high grade filtering materials can be used because the action is gentle yet positive. Reverse jet rings move up and down, cleaning continuously.
- **NO DUST-CATCHING LEDGES**... DAY TYPE "AC" FILTERS, with a pattern of square-to-round inlet fittings, have no flat surfaces where dust can accumulate and become contaminated.
- **OUTSTANDING ADAPTABILITY**... units can be furnished with multiples of 4 tubes; housed or unhoused (see illustration); can be applied for either pressure or vacuum.

SCHEMATIC OPERATING DESIGN

The reverse air jet mechanism provides uniform cleaning over the entire length of the tubes, and operates with a maximum cloth area loss of only 1 1/4% at any time. Air volumes remain constant and there are no cleaning shutdowns to cause high back pressures and sharp air volume variations.



Write-to-DAY for Bulletin 491



The DAY Company

852 3rd Avenue N. E., Minneapolis 13, Minnesota
In Canada: P. O. Box 70, Fort William, Ontario.
Branch Plants in Fort Worth, Buffalo and Welland, Ont.

PROCESSING EQUIPMENT

Presents various equipment for process industries

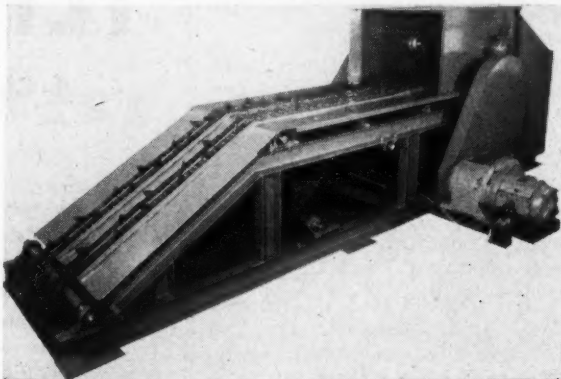
Twenty-four-page bulletin describes and illustrates items of processing equipment. Contents cover storage structures; dryers; evaporators; filters; gasholders; mixers; sedimentation equipment; and company's fabrication facilities. "Quality Equipment" is issued by General American Transportation Corporation, Dept. CP, 135 S. LaSalle St., Chicago 90, Ill. When inquiring specify CP 5222 on handy form, pages 2 and 3.

Bales are torn apart quickly as they are pushed against toothed breaker head...

machines break apart materials that are highly compressed or loosely baled

Uses: Takes highly compressed bales of cotton linters, bales that are so hard that an axe won't cut into them, and tears them apart readily for processing. Also used for opening bales of excelsior, tobacco and leather scrap and straw.

Description: Bales are brought to the feed conveyor,



Opens bales of cotton linters, straw, tobacco

which pushes them against a revolving head. Material is torn apart and opened up by projecting teeth. Production rate is indicated by performance in opening straw bales at approximately 1,000 lb per minute.

Machine illustrated has a throat 36" wide with head diameter of 24". Bale breakers are made in sizes up to 72" throat and head diameter of 42".

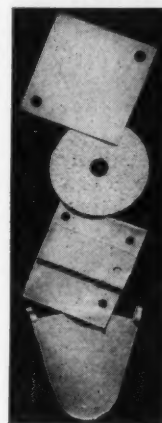
Source: Taylor, Stiles & Co., Dept. CP, Bridge St., Riegelsville, N. J. ... or for more information check CP 5223 on handy form, pages 2 and 3.

Discusses systems and units for continuous coating

Sixteen-page brochure discusses web and strand coating systems and the various basic units of these systems, with particular attention to machine design aspects. Various typical arrangements of components and their relationships within complete systems are treated in detail. Brochure is clearly written, interesting, and easy to follow. Fifty drawings and photographs are keyed to the text to assist understanding.

Units for web coating discussed include knife and roller coaters, unwind strands, cooling drums, pull roll stands, and drying machines. Units for both dip and extrusion coating systems of strand materials include letoffs, dip

FILTER MEDIA for Chemical Processing



FILTER PAPER

LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

FILTER CLOTH

Cottons, wools, felt, glass, nylon, silk, vinyon, saran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.

ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.

OTHER "Filpaco" PRODUCTS: Filters, stainless steel storage and mixing tanks, fillers, pumps, conveyors, fittings, and filter aids.

WRITE TODAY for further information and samples!



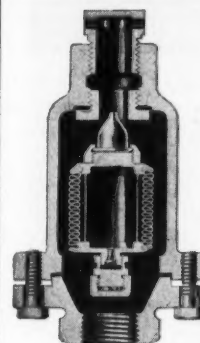
FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 5224 on handy form, pgs. 2-3

AIR VENTING

for Industrial Equipment —



SARCO
THERMOSTATIC
AIR VENTS

Steam using equipment cannot operate efficiently unless air is constantly removed. This applies particularly to the starting period when the equipment is full of air, and to the constant addition of air introduced with the steam.

Simple, inexpensive Sarco air vents can eliminate this difficulty, but they must be applied at the right points on the equipment or the lines. Complete information is available in Catalog No. 275-A.

296

SARCO
SAVES STEAM

IMPROVES PRODUCT QUALITY AND OUTPUT

SARCO COMPANY, INC.

Represented in Principal Cities

Empire State Building, New York 1, N. Y.
SARCO CANADA, LTD., TORONTO 5, ONTARIO

When inquiring check CP 5225 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 5221 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

coating pot arrangements, extrusion machines, pro-
pelling strands, constant tensioning stands, and winding
machines. "Continuous Automatic Processing Equip-
ment" is issued by Industrial Ovens, Inc., Dept. CP,
13825 Triskett Rd., Cleveland 11, Ohio. When inquir-
ing specify CP 5226 on handy form, pages 2 and 3.

Socket meter troughs are for indoor, outdoor use . . .

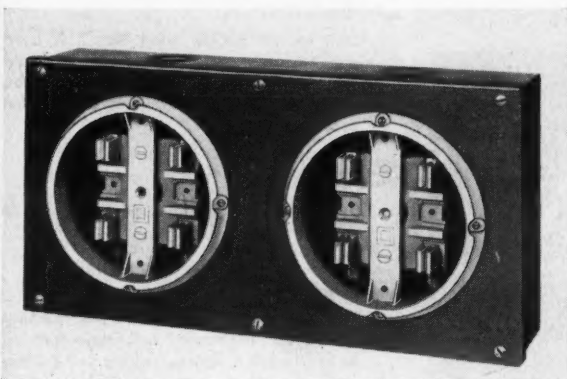
porcelain base floated to cut breakage and provide
automatic jaw alignment

Uses: Socket meter troughs for indoor or outdoor
(rain-tight) installations, surface or flush mounting. Rated
at 100 amp.

Features: One-piece porcelain base is floated to reduce
breakage and provide automatic alignment of jaws. Entire
box can be opened for easy, fast wiring. Extra jaws can
be added in the field, eliminating need for special stocks.

Description: Sockets accommodate up to six jaws, easily
converted to either horizontal or vertical position. Termi-
nals accommodate up to # 1 wire. Cover and diecast ring
are removable, leaving socket base and terminals in place.

Rain-tight enclosures are designed to include manufacturer's
interchangeable hubs, greatly simplifying stocking. Com-



Socket meter trough

binations of sockets and service entrance equipment within
the same enclosure are available.

Source: Addition to line of Square D Company, Dept.
CP, 6060 Rivard St., Detroit 11, Mich. . . or for more
information check CP 5227 on handy form, pages 2 and 3.

Properties, ways of working stainless tubing given

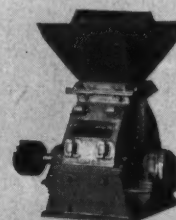
Measuring 8 x 5", 104-page leather-bound booklet serves
two purposes: to aid in selection of proper tubing, and
to help in planning conversion of stainless steel tubing
into finished products.

It describes various tubing steels and deals with methods
of manufacture and inspection; corrosion and oxidation
resistance; and methods of working and fabrication. Tables
of technical data for 8 different stainless steels are given,
along with lists of applications. Booklet is liberally illus-
trated with photographs and detailed diagrams, includes
temperature and linear conversion tables. Technical Bul-
letin 1B is issued by The Babcock & Wilcox Tube Com-
pany, Dept. CP, Beaver Falls, Pa. When inquiring speci-
fy CP 5228 on handy form, pages 2 and 3.

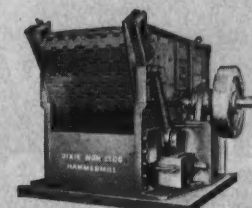
A Complete Line of Crushers and Process Grinders for **CHEMICAL PLANTS and the PROCESS INDUSTRIES**



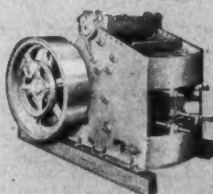
SINGLE ROLLS



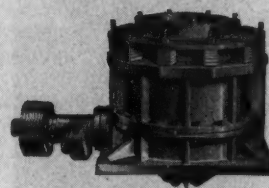
IMPACTORS and
HAMMERMILLS



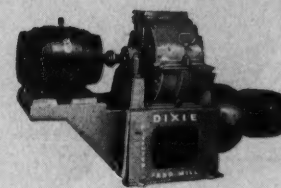
DIXIE NON-CLOGS



KUE-KEN JAWS



KUE-KEN GYRACONES



DIXIE
PROCESS GRINDERS

HOW TO BE SURE what type of crusher is most satisfactory for your job

Crushing problems are seldom, if ever, identical. This is because of such variables as product wanted, feed size, capacity, moisture content, and physical and chemical structures of material. Obviously no one type of crusher can meet all conditions, yet determining the most economical and efficient machine *before* you purchase is most desirable.

That is why Pennsylvania has a large and varied line, each made in many sizes from very small capacities to very large. For over forty years our

engineers have been studying every conceivable type of crushing procedure—seeing the results—the failures and successes of all types of machines. The wrong machine for your job can be an expensive affair, not always immediately apparent, but a steady drain and a constant source of dissatisfaction.

We have a job analysis form that is the first step in determining what crusher is best for you, and it's yours for the asking, as is descriptive literature on each crusher.

PENNSYLVANIA CRUSHER COMPANY • Division of Bath Iron Works Corporation,
1717 Liberty Trust Bldg., Philadelphia 7, Pa.

NEW YORK • BOSTON • PITTSBURGH • BIRMINGHAM • ROANOKE •
DETROIT • CHICAGO • ST. LOUIS • CROSBY, MINN. • LOS ANGELES •
LONDON, ENGLAND

Manufacturers of a complete line of crushers

SEND FOR LITERATURE

Single Roll Crushers—Reversible Impactors—Reversible Hammermills—
Ring-Type Granulators—Brad mills—Bradford Breakers—Brad-
ford Hammermills—Kue-Ken Jaws—Kue-Ken Gyracones—
Dixie Non-Clog Hammermills—Dixie Feed Mills and Proc-
ess Grinders

PENNSYLVANIA
CRUSHER COMPANY

Pennsylvania
CRUSHERS

When inquiring check CP 5229 on handy form, pgs. 2-3



HEVI DUTY High Temperature Tube Type Furnaces

• The heating element of Alloy 10 wire is designed particularly for long life at high operating temperatures.

**For Carbon Determinations
Special Organic Analysis
Pyrometer Checking and Calibrations
Heat Treating
Experimental Operations**

For operations where temperatures from 2000°F. to 2300°F. are required, Hevi Duty tube type furnaces are the choice of many laboratories. Write for Bulletin LAB-138 or

SEE YOUR LABORATORY SUPPLY DEALER

HEVI DUTY ELECTRIC COMPANY

HEAT TREATING FURNACES **HEVI DUTY** ELECTRIC EXCLUSIVELY
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS
MILWAUKEE 1, WISCONSIN

When inquiring check CP 5230 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Cement-making applications shown for dust collectors

Actual installations of various types of dust collectors are shown and described in 2-color folder. Although applications shown are in cement, stone, and rock crushing plants, much of the data is of general interest. Bulletin C-117 is issued by Western Precipitation Corporation, Dept. CP, 1016 W. 9th St., Los Angeles 15, Calif. When inquiring specify CP 5231 on handy form, pages 2 and 3.

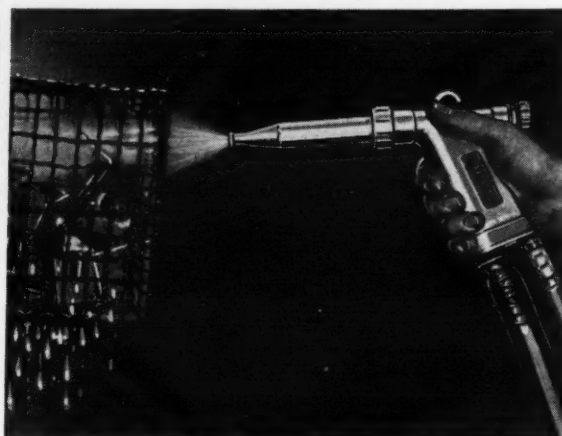
Uses compressed air to form fine spray from water for rinsing, cleaning . . .

pressure washer does not create a back splash, is harmless to finishes

Uses: As a fast and thorough rinsing device and for cleaning equipment.

Features: Pressure washer is connected directly to ordinary air and hot or cold water supply outlets. Spray produced will not create a back splash, and is harmless to the finest finish, but is effective in removing heavy dirt. Water consumption is said to be reduced by up to one-third with this device.

Description: Compressed air separates the water into minute particles, thus creating a fine spray that will pene-



Fine spray from pressure washer penetrates crevices

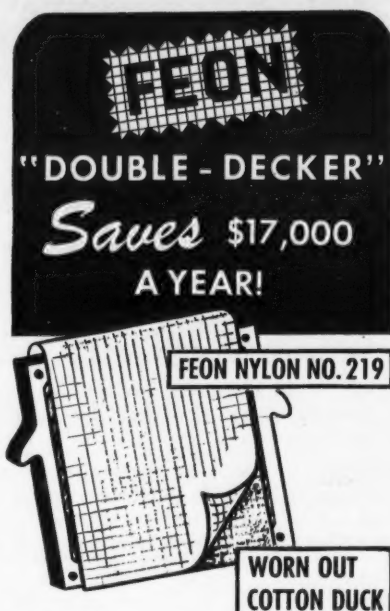
trate small cavities. Unit is chrome plated, is shaped like a revolver so that it fits into the palm of the hand.

Source: D. & M. Products, Inc., Dept. CP, 30 N. Raymond Ave., Pasadena 1, Calif. . . or for more information check CP 5232 on handy form, pages 2 and 3.

Specific and general data on magnetic traps given

Complete descriptions, pertinent engineering data (including photographs and drawings), and tables of specifications are given in 16-page magnetic separator catalog. Information on the selection of the appropriate unit, the factory engineering service available, a full explanation of the life of permanent magnets, and the importance of application engineering are fully dealt with.

Units presented include plate magnets; double and triple row magnets; hump assemblies; pipeline traps; rotary floor and tank sweepers; ferrous cleaners; magnetic pulleys and



Problem:

Cotton filter cloth, used for filtering yeast on filter presses, lasted less than 6 weeks.

Solution:

Light-weight FEON nylon No. 219, used over worn-out cotton cloths. The nylon did the work and took the wear. The cotton absorbed rim pressures, acted as a gasket seal.

Result:

The two-cloth combination lasted 18 months without changes.

Savings:

The cotton cloth cost \$2550 per dressing—\$30,600 for 18 months. A single dressing of FEON nylon, lasting as long as 12 dressings of cotton, cost only \$5100—saved \$25,500 for the 18 month period, \$17,000 per year. You can save too—ask for FEON facts and figures on your job today!



Send for new
FEON Selector Chart
containing samples,
technical data and
case histories.

FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, Inc.

155 Oraton Street • Newark 5, N. J.

When inquiring check CP 5233
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Always on the JOB



200,000-gallon Horton tank providing general water service at the Pemex Refinery in Salamanca, Mexico.

A Horton elevated water tank is your assurance of better water service 24 hours a day — 7 days a week.

This unfailing performance is obtained by utilizing gravity pressure. Most mechanical and electric failures have no effect when nature does the work. The force of gravity maintains the pressure at all times in a water system supplied by an elevated water tank.

Horton elevated water tanks are built in capacities ranging from 5,000 to 3,000,000 gallons. Write our nearest office for details and prices. There is no obligation.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3 2107 Healey Bldg.
Birmingham 1 1533 North Fifth St.
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Chicago 4 2116 McCormick Bldg.
Cleveland 15 2212 Guildhall Bldg.
Detroit 26 1535 Lafayette Bldg.
Houston 2 2151 National Standard Bldg.
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New York 6 3314-165 Broadway Bldg.
Philadelphia 3 1650-1700 Walnut St. Bldg.
Salt Lake City 4 507 West 17th South St.
San Francisco 4 1545-200 Bush St.
Seattle 1 1307 Henry Bldg.
Tulsa 3 1649 Hunt Bldg.
Washington 6, D.C. 1158 Cofritz Bldg.

When inquiring check CP 5234 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

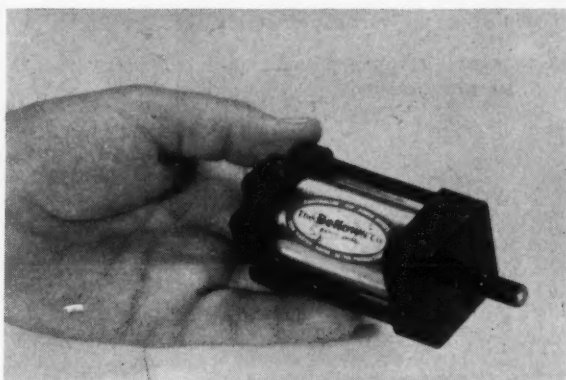
drums; agitator separators; magnetic pipe rolls and conveyor elements; and electronic metal detector. Much information on protection and installations is also included in Catalog 15, issued by Eriez Manufacturing Company, Dept. CP, Erie, Pa. When inquiring specify CP 5235 on handy form, pages 2 and 3.

Develops thrust equal to applied air pressure . . .

small air cylinder mounts in practically any position
Uses: Air cylinder is primarily for use in jig and fixture operations, also for parts positioning and ejection.

Features: Latest addition to maker's "Controlled-Air-Power" devices. Mounts in practically any position — front flange, rear flange, side, foot, or front pivot.

Description: "Han-D-Air Cylinder" is a 1-1/8" bore, 1" stroke, single acting, spring return type. It develops



Universal mounting small air cylinder

a thrust approximately equal to the applied air pressure. Dimensions are 4 1/2" long x 1 1/2" high x 1 1/2" wide. The 5/16" diameter piston rod has 1/2" of threaded end to simplify installation. Construction is reported to be unusually sturdy for simple design.

Source: Development of The Bellows Company, Dept. CP, 222 West Market St., Akron 9, O. . . or for more information check CP 5236 on handy form, pages 2 and 3.

Insulated walk-in rooms built from prefabricated panels

Two-page bulletin gives detailed information on prefabricated insulated panels which are suitable for the erection of hot or cold walk-in rooms. As system is based on modular principle, rooms are unlimited as to size or shape. They provide insulated space with controlled temperatures from -100 to +200°F and relative humidity simulation from 20 to 95%. Uses include storage of biologicals, equipment, and perishables; stabilization and aging of metals; preconditioning of components; weathering; process drying; and incubation.

Special instrumentation, accessories, connectors, etc., can be engineered to meet individual requirements. Panels may be clad with stainless steel, aluminum, or other metals. For operation under unusual conditions, room can be provided with special air locks or anterooms. Bulletin WR-251 is issued by Bowser, Inc., Technical Refrigeration Div., Dept. CP, Terryville, Conn. When inquiring specify CP 5237 on handy form, pages 2 and 3.

Choose the Valves You Need from . . .
the Complete Line of

R·P·C VALVES

FIG. 409
Bronze
Globe
Valve



When you choose R-P-C Valves, you can be sure of the same high quality of each one—from tiny 1/8" valves . . . to high-pressure, high-heat valves . . . and giant valves for handling huge volumes of liquids.

- You can get bronze, iron, steel—bar stock—iron cocks—and cast steel fittings. Two new numbers are PRESSURE SEAL BONNET and FORGED STEEL GATE. New ones coming.
- Call your local R-P-C distributor today or write the nearest R-P-C district office.

ACCO



Reading, Pa., Atlanta, Baltimore, Boston, Chicago, Denver, Detroit, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

R-P-C VALVE DIVISION
AMERICAN CHAIN & CABLE

"Intentionally Better"
READING-
PRATT & CADY
VALVES

When inquiring check CP 5238 on handy form, pgs. 2-3

STANDARD ONE GALLON medium pressure AUTOCLAVE

PRESSURES UP TO 1200 P. S. I.

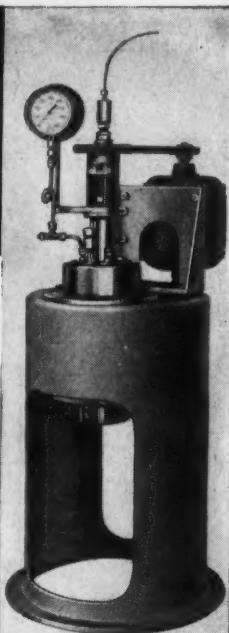
Here's the newest in Autoclave Engineer's family of pressure vessels for research. Note These Features:

- 1 Gallon Capacity
- Pressures to 1200 P. S. I.
- Internal Parts Type 18-8 Stainless Steel
- Operating Temperature to 650°F
- Electrically Heated
- Water Cooled Drive Shaft
- Variable Speed Agitation

Complete with explosion-proof motor, 4½" dial gage and blow out assembly.

WRITE FOR BULLETIN 4151

Export Dept. 751 • Drexel Bldg. • Philadelphia 6, Pa.



AUTOCLAVE ENGINEERS, INC.

860 EAST 19th STREET • ERIE, PENNSYLVANIA
LABORATORY & PILOT PLANT HIGH PRESSURE EQUIPMENT



When inquiring check CP 5239 on handy form, pgs. 2-3

More Effective Washing



with Infinitely Variable Speed
TOLHURST CENTRIFUGALS

Tolhurst Hydraulic Drive Center-Slung Centrifugals with stepless variable speeds enable you to select the correct speed for most effective washing of your particular product. Tachometer indicates exact basket speed at all times.

Baskets can be perforate or imperforate, constructed of steel, steel rubber covered, stainless steel, monel or other alloys. Steel case can be lined with stainless steel, monel, rubber or other materials as specified. Fume-tight cover can be furnished complete with feed and spray pipe.

Write for Details and Prices

TOLHURST CENTRIFUGALS DIVISION

BASKET SIZES AND SPEEDS:

12" dia.	0-3400 RPM
20" dia.	0-1600 RPM
24" dia.	0-1400 RPM
26" dia.	0-1200 RPM
30" dia.	0-1000 RPM
18" dia.	0- 850 RPM
48" dia.	0- 750 RPM

AMERICAN MACHINE
AND METALS, INC.
East Moline, Illinois

To
get
more
information
on
products
see
Readers
Service
Slip
just
inside
the
Front
Cover

When inquiring check CP 5240 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

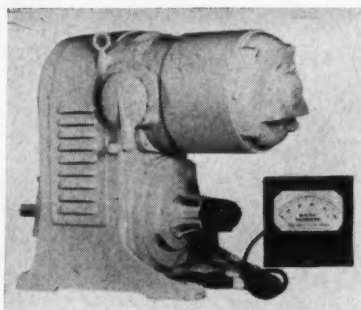
Show speed indications for variable drive with tachometers . . .

dial may be located at point up to 300' away

Uses: For motor applications that require continuous and accurate speed indication. Arrangement provides for ratings from ¼ to 50 hp and for speeds from 2 to 10,000 rpm.

Features: Tachometer is entirely enclosed to prevent entrance of dust and other foreign particles, and can be mounted at distances up to 300' from the drive unit.

Description: Variable drive motors are available with Model R-1 tachometer and generator. The permanently lubricated, ball bearing type generator is coupled to the variable drive and



Drive with tachometer

requires no other source of power. Indicator dial shows operating speed as a percent of the variable drive maximum speed. If the variable drive maximum speed is 1000 rpm and the dial indicates 60%, variable drive speed would be 60% of 1000 rpm or 600 rpm.

By the use of a percentage indicator, rate of production of a given machine is instantly available. Other forms of dial indication may be secured on order. Each unit has 10' of two-conductor cable.

Source: "Varidrive" motors with tachometer and generator are built by U. S. Electrical Motors, Inc., Dept. CP, 200 East Slauson Ave., Los Angeles 54, Calif. . . or for more information check CP 5241 on handy form, pages 2 and 3.

Shows use of switches on face grinder

Two-page publication shows how 10 small switches were used on radial head face grinder. "Uses Unlimited", Vol. 7, No. 1, is issued by Micro Switch, Dept. CP, Freeport, Ill. When inquiring specify CP 5242 on handy form, pages 2 and 3.

Calling all users of Speed Reducers!

Get the new
**Cleveland
Book
FREE**



Bulletin 130 gives rating tables, dimensions and other data you need in selecting the right sizes in standard worm-gear speed reducers. Ask for your copy.

New bulletins on other types of Cleveland worm gear drives and worm-gear sets also available. Outline your needs. The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, Ohio.



CLEVELAND
Worm Gear
Speed Reducers

When inquiring check CP 5243 on handy form, pgs. 2-3

When you specify
BLAW-KNOX GRATING
you get . . .

- Rigid One-Piece Construction, easy to install.
- Maximum open area for light and air.
- Easy painting—all surfaces accessible.
- Non-slip tread due to twisted bar.
- Self-cleaning—no sharp corners to clog.
- Write for complete specifications.

BLAW-KNOX Electroforged
GRATING AND STAIR TREADS

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.

When inquiring check CP 5244 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Chart drive and hub data given in bulletin

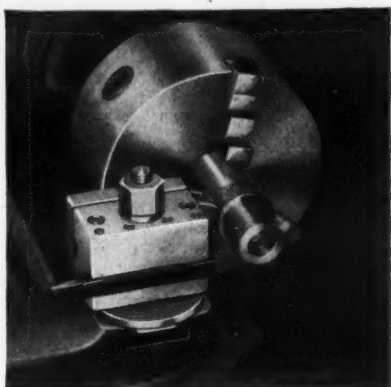
Chart drives and accessories for recording meters and instruments are presented in 6-page, 2-color bulletin. Eight-day chart drives come in 2 sizes adapted to variety of rotation speeds by turrets which quickly convert to any of 10 additional speeds from 2 hours to 8 days. Also described are 31-day drives with turrets to convert to speeds from 15 to 31 days. Drives and accessories (hubs, etc.) are fully described and illustrated. Bulletin 1079 is issued by Rockwell Manufacturing Company, Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. When inquiring specify CP 5245 on handy form, pages 2 and 3.

Eliminates need for many types of tool holders in various lathe operations . . .

10-in-1 tool holder has screw adjustment for tool height; is supplied in five sizes

Uses: For holding lathe tools during boring, cutting-off, turning, facing, and threading operations.

Features: Has a screw adjustment for tool height. Once adjusted, tools of the same type can be changed without disturbing the height adjustment. Holder is of the universal type; its use eliminates the need for the many different types of tool holders usually required.



Holder used in knurling operation

Constructed of heat-treated steel, 10-in-1 tool holder comes equipped with a self-aligning knurling head and a pair of medium diamond knurls. Coarse and fine diamond knurls, and coarse, medium and fine straight pattern knurls are available. Boring tools, cutting-off blades and a set of four ground cutter bits are also available.

Holder is supplied in five sizes for manufacturer's lathes and can easily be adapted for use on some other makes.

Source: The South Bend Lathe Works, Dept. CP, South Bend 22, Ind. . . or for more information check CP 5246 on handy form, pages 2 and 3.

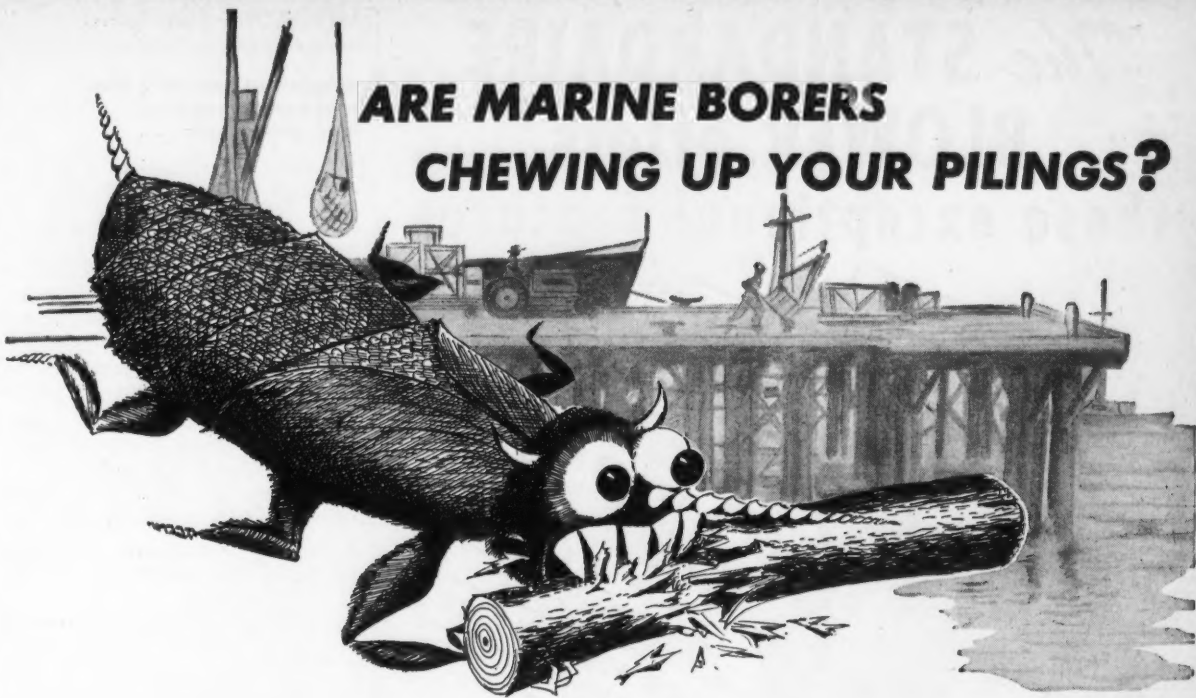
Motor protection stressed in illustrated booklet

Coordinated protection of circuits, motors, and personnel is explained in 12-page booklet. Starters detailed are for squirrel-cage, synchronous, wound-rotor, and multi-speed motor installations. Component fuse of each starter is described, with graphs and oscillograms to show performances. Comparative discussions of oil-immersed and air-break contactors are provided to aid selection for specific applications. Sectionalized steel enclosures are illustrated.

Booklet DB-4673 is issued by Westinghouse Electric Corporation, Dept. CP, Box 2099; Pittsburgh 30, Pa. When inquiring specify CP 5247 on handy form, pages 2 and 3.

JUNE, 1951

ARE MARINE BORERS CHEWING UP YOUR PILINGS?



Starve them with steel—plus **NATIONAL** graphite ground anodes!

TRADE-MARK

WHY GRAPHITE ANODES ARE BEST FOR CATHODIC PROTECTION:

- Complete and sure protection in sea water—indefinitely
- Positive control in any weather; just change a tap on the rectifier to raise or lower current input
- Perfect for use in high resistance soils
- Longest life of any anode material obtainable
- Thoroughly tested and proved in service for more than 20 years

The term "National" is a registered trade-mark of
NATIONAL CARBON COMPANY
 a Division of
 Union Carbide and Carbon Corporation
 30 East 42nd St., New York 17, N. Y.
 District Sales Offices:
 Atlanta, Chicago, Dallas, Kansas City,
 New York, Pittsburgh, San Francisco
 In Canada: National Carbon Limited, Toronto 4



If your dock facilities are subject to attack by marine borers, install borer-proof steel pilings, and protect those pilings from underwater corrosion by economical long-lasting "National" graphite ground anodes.

The anodes are lowered to the bottom and connected with a shore-based rectifier. Another wire from the rectifier runs to the steel pilings. When current is passed, it flows out from the pilings into the water—thus giving very complete cathodic protection. No matter how severe the corrosive conditions are, you can regulate the current to afford the proper protection, simply by adjusting the rectifier.

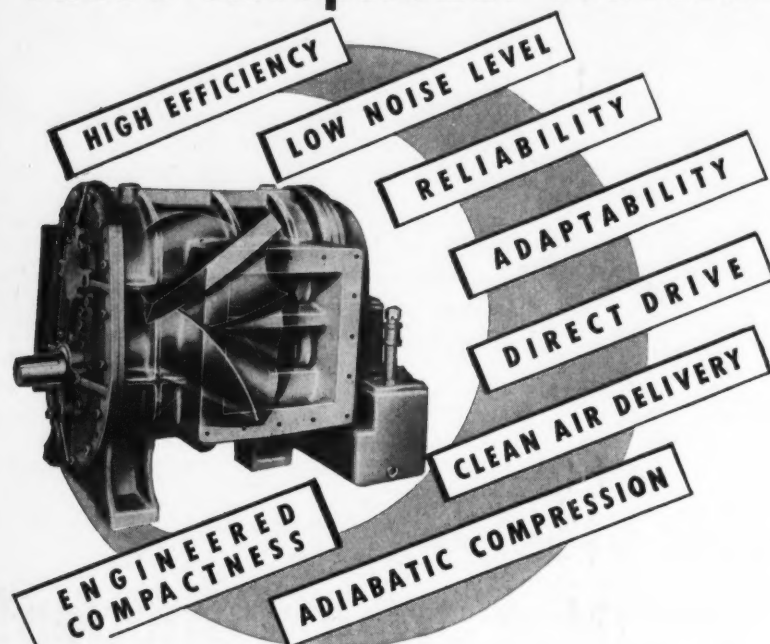
Other advantages of steel pilings are: more strength . . . better fire resistance . . . less maintenance . . . lower insurance rates.

"National" graphite ground anodes also provide the most practical and economical cathodic protection for buried pipe lines, tank farms, oil well casings, water mains, underground cables, ship hulls and dozens of other products buried in earth or submerged in water.

Cathodic protection saves steel!

When inquiring check CP 5248 on handy form, pgs. 2-3

The STANDARDAIRE BLOWER offers these exceptional features



WHETHER you require 20 cfm or 15,000 cfm capacity blowers these features are inherent in the unique design of the modern Standardaire positive displacement blower. Its epicycloidal rotor form acting as an air screw is unlike that used in the conventional lobe type unit—and Standardaire blowers have demonstrated their all-around superior performance to the satisfaction of many leading industrial users.

Send today for complete information. If you have specific requirements

our engineers will welcome the opportunity to work with you. Write Dept. E33
READ STANDARD CORPORATION,
 370 Lexington Ave., New York 17, N. Y.

Do you have the 1951 STANDARDAIRE Selection Chart?



BLOWER-STOKER DIVISION

FORMERLY
The Standard Stoker Co., Inc.
 ONLY THE NAME IS CHANGED

READ STANDARD
 CORPORATION

NEW YORK • CHICAGO • ERIE • YORK • LOS ANGELES

When inquiring check CP 5249 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

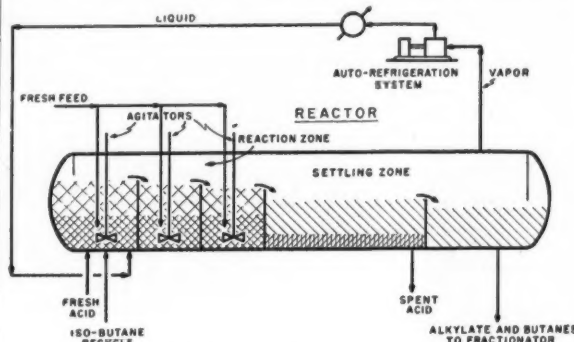
Alkylation reactor's design cuts costs of making high octane gas . . .

saves sulfuric acid catalyst, permits economical use of high isobutane/olefin ratio

Uses: Reactor for sulfuric acid alkylation of olefins with isobutane to produce higher octane fuels than are available from more conventional units. As used in the petroleum industry, this reactor receives liquefied light, volatile refinery gases and discharges a high octane liquid product boiling within the gasoline range. This product, after debutanizing and depropanizing, can be added in certain proportions to refinery gasoline to improve its octane rating.

Other applications in the chemical and allied fields are possible. The reactor could possibly be employed in processes where it is desired to control concentrations and ratios, and to have short reaction times.

Features: Compartmented design of this cascade type reactor has two advantages: 1) spent acid can be with-



Sulfuric acid alkylation reactor

drawn at lower concentration than in single contact reactors . . . this is due to the fact that in the cascade unit the alkylation has reached a high degree of completion before the catalyst acid has become diluted to any great degree. 2) A high isobutane/olefin ratio (9 to 1) may be maintained in reaction zone because the feed is split into three streams, one going to each compartment, while the recycle isobutane is fed to the first compartment only. However, the actual external isobutane/olefin ratio is only 4 to 1, meaning that the benefits of a high ratio in the reactor may be obtained without the drawback of using a larger isobutane tower, attendant reboiling facilities and utilities.

The use of propeller type agitators instead of jet mixers, as was the case in some previous types of reactors, has permitted hp savings exceeding 75%, it is reported.

Another improvement is the use of auto-refrigeration to control reactor temperature. Heat of reaction is removed by vaporization. A portion of the vapor is continuously removed from top of reactor, compressed, condensed, and returned to reactor. Investment cost for this system is reported to be much lower than for outside refrigeration systems.

Description: In a complete, modern alkylation plant, fresh feed from storage is heat exchanged against reactor effluent and then divided between the various compartments in reaction zone of reactor. Fresh acid and isobutane are introduced into the first reaction compartment. After passing through reaction zone, the acid is settled out and withdrawn from reactor.

Hydrocarbon effluent, consisting of alkylate and isobutane

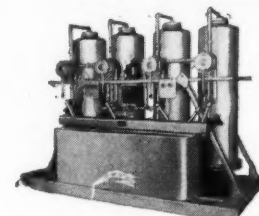
PURE WATER

AT LOWEST COST

WITH
BARNSTEAD
 DEMINERALIZERS

FOR

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- Anodizing
- Boiler Feedwater
- Plating
- Cosmetics
- Television Tubes
- Battery
- Maintenance
- Electroplating
- Ore Floatation
- Mfg. of Coated Paper
- Ceramics
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- Rectifying Liquor
- Coating Solutions
- Aircraft Research
- Washing Ampules
- Laboratories
- Pharmaceuticals



In countless processes better results are obtained, when pure water — free from harmful minerals is used. In fact, hundreds of manufacturers have already found that they save money, have fewer rejects and get a better product with Barnstead Demineralized Water. The cost is extremely low — as little as 5c per 1000 gallons. Operation is very simple. And with a Barnstead Demineralizer, you get the benefit of more than 75 years of specialized experience in water purification. Write for Catalog #123.

THESE FIRMS — AND MANY OTHERS — ARE NOW USING BARNSTEAD DEMINERALIZERS

Air Reduction Sales Co. — American Mirror Works — Haloid Corp. — Eitel-McCullough Company — Tung-Sol Lamp Works — Remington-Rand — R.C.A. — National Bureau of Standards — Wyeth, Inc. — General Electric Co. — Polaroid Co. — Hercules Powder Co. — Standard Oil Development — International Harvester Co. — Koppers Co. — Behr-Manning Co. — Ford Motor Company — University of California — Marquardt Aircraft — Sarks-Tarzan Co. — Dewey & Almy — Monsanto Chemical Co.

PROMPT DELIVERIES ON MOST MODELS

Models from 5 to 1000 gallons per hour

Barnstead
 STILL & STERILIZED CO.

66 Lanesville Terrace, Boston 31, Mass.

When inquiring check CP 5250 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Reduce Plug Valve Costs
Reduce Lubricating Time
Reduce Lubricant Stocks

by using the
DELTA-DESCO
Plug Valve
Lubricating
SYSTEM



Using the DELTA-DESCO SYSTEM an operator can lubricate 10 to 15 valves in the time usually required to lubricate one with the conventional jack screw.

DELTA LUBRICANTS — Only 4 Desco Standard Service Lubricants and 3 Special Lubricants do the entire job. Packed in convenient, time-saving, individual barrel size sticks. Packed 12 sticks to a carton, 6 cartons in a case.

DELTA GUN — Lightweight, all steel, chrome finish. Easy to carry, easy to load. Fast snap-on, snap-off operation. Develops 10,000 pounds pressure.

DELTA FITTINGS — Quickly adapt any lubricated plug valve for Delta Gun. Single and double-check and combination lubricant screw fittings. High pressure, leak proof, safety tested.

DELTA-DESCO ENGINEERS supervise installation, recommend proper lubricants, train plant personnel, make periodic checks of all DELTA-DESCO Equipment.

WRITE FOR DELTA-DESCO CATALOG 14-0

DELTA Automatic Plug Valve LUBRICATOR

A simple device, automatically lubricates valve each time it is opened and closed. Write for Lubricator Catalog 15-0.



The Only Complete
 Plug Valve
 Lubrication
 Company



DELTA
ENGINEERING SALES CO.

P.O. Box 678 Phone 5-2416

SHREVEPORT, LOUISIANA, U. S. A.
 Sales Offices in All Principal Cities

When inquiring check CP 5251
 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

recycle, is heat exchanged with feed, and washed with caustic and water to neutralize any residual acidity. Isobutane recycle is then fractionated from alkylate and normal butane in the isobutane tower, following which the alkylate is debutanized. Finally, in an aviation gasoline operation, alkylate is rerun to meet end point specification for aviation blending stock.

Reactors are made of carbon steel. Alloy or lined construction should be practical for other services.

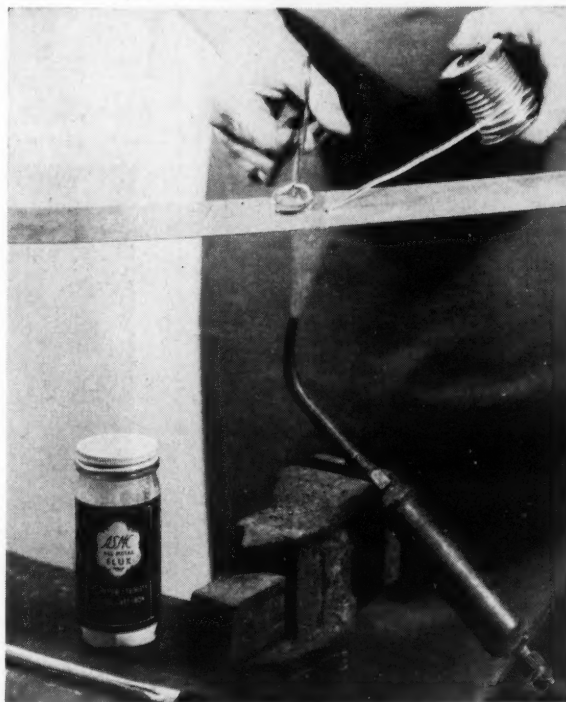
Source: The M. W. Kellogg Company, Dept. CP, 4 Barclay St., New York, N. Y. . . . or for more information check CP 5252 on handy form, pages 2 and 3.

Damaged galvanizing restored to strength of hot dip . . .

wire solder makes homogenous coat; has great fluidity

Uses: Restores damaged galvanizing. Effective on underground connections, refrigerators and many similar applications.

Features: Particularly effective in soldering on galvanizing destroyed by welding. It is said that this solder withstands salt spray bath without deterioration in tests of exposure of 800 hours. No line of demarcation is shown between this solder and hot dip job. Amalgamates readily with hot dipped galvanizing.



Galvanizing solder applied with torch or iron

Description: This solder has a melting point of only 17°F higher than 50/50 and has a very high degree of fluidity. It may be applied successfully with torch or soldering iron and may be used with either maker's ASMC all-metal or "Mayolite" flux on steel, iron, brass, copper, galvanized, terne plate.

Source: Farco galvanizing wire solder is made by Farrelloy Co., Dept. CP, 1260 North 26th St., Philadelphia, Pa. . . . or for more information check CP 5253 on handy form, pages 2 and 3.

from finishes



to food!



wide-awake process men value

DOWTHERM

the MODERN heat transfer medium

Process men in many industries have proved by long use the economies offered by Dowtherm®—the controlled heat transfer medium.

Operating at low pressures and with precise uniformity over a wide range of high temperatures, Dowtherm effects vital savings in time and materials. Uniform temperatures put an end to spoiled batches, costly shutdowns and replacements. Dowtherm not only increases quality and production, but also assures efficiency with a minimum of maintenance and operating costs.

Where your operations require accurate, low pressure heating in the 300°-750°F. range, use Dowtherm. Write to Dow for complete information.

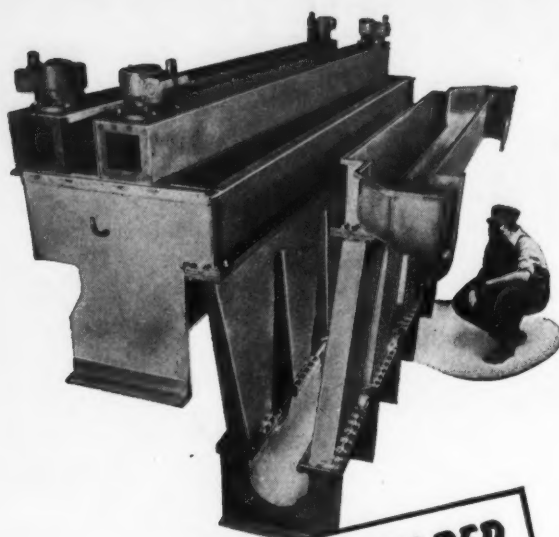
THE DOW CHEMICAL COMPANY
 MIDLAND, MICHIGAN

THE DOW CHEMICAL COMPANY
 DEPT. DO-13
 MIDLAND, MICH.
 "Tell me more about DOWTHERM."

Name _____ Title _____
 Company _____
 Address _____
 City _____ State _____



When inquiring check CP 5254 on handy form, pgs. 2-3



**INTRICATELY SHAPED
STAINLESS STEEL EQUIPMENT**

When you require intricately shaped stainless steel equipment, bring your drawings to a fabricator who has had special experience in producing difficult shapes.

The fabricating of stainless steel requires skill even in the making of standard shapes. When odd shaped vessels are constructed, even greater skill is required. Your fabricator must have special tools and dies, tested manufacturing techniques and above all long experience with the behavior of stainless steel during fabrication to produce vessels that give maximum efficiency — longer life for your application.

S. Blickman, Inc. works *exclusively* with stainless steel and alloys — has been doing so for many years. Our engineering experience — our production techniques — our specially equipped plant — may help *you* solve the problems of getting better-built processing equipment in odd shapes. Consult with us.

S. BLICKMAN, INC. • 706 GREGORY AVE., WEENAWKEN, N.J.

S. BLICKMAN, INC.
Guards Alloys in Fabrication

KORROSION RESISTANT PROCESSING EQUIPMENT

TANKS • RETILES • STILL • HEAT EXCHANGERS • AGITATORS • MIXERS • TOWERS • PIPING

SEND FOR THIS VALUABLE BOOK

A request on your letterhead will bring our guide, "What to Look for When You Specify Stainless Steel for Your Processing Equipment."

When inquiring check CP 5255 on handy form, pgs. 2-3

Page 136

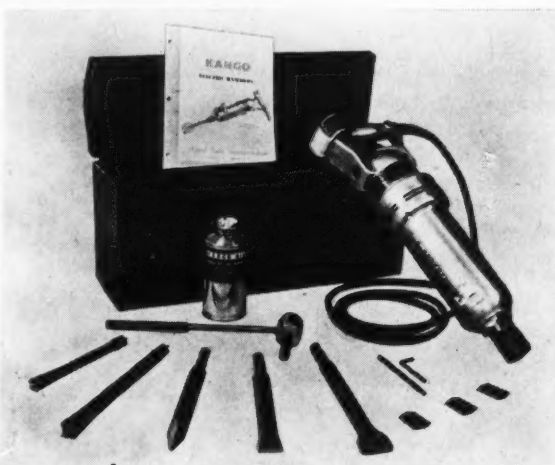
PROCESSING EQUIPMENT

Wide selection of tools available for use with electric hammer . . .

clutch in hammer prevents overloading when starting
Uses: For drilling holes in concrete, breaking solids, tamping, driving rods into the ground, wood gouging, etc.

Features: Mechanism of the Kango hammer is so arranged that the striker reciprocates harmlessly between two springs whenever the hammer is withdrawn from the work. Only a very slight tremor is felt by the operator, and life of the hammer is increased.

A clutch is used to prevent overloading when starting and also to prevent shocks from reaching the armature spindle



Electric hammer and some of the tools used with it

when sudden changes in velocity take place as the blow is struck.

Description: Line consists of three sizes of hammers: heavy duty, medium duty, and light duty, and a large variety of special tools for different jobs.

Hammer consists of a striker reciprocated by two centrifugal weights. Weights are attached to bevel gearing which, in turn, is driven through a spline shaft by the electric motor. Current consumption is so low that the hammer can be run off any ordinary 5-amp fitting. A metal carrying case and a selection of tools are supplied with each hammer.

Source: Allied Tools, Inc., Dept. CP, 321 Central Ave., Newark 4, N. J. . . or for more information check CP 5256 on handy form, pages 2 and 3.

New rubber compound makes effective seals at temps from -85 up to 275°F . . .

recommended for service with ozone, lubricating oils, and hydraulic fluids

Uses: O-rings and other precision molded seals are now offered in a recently developed synthetic rubber compound to endure temperature extremes.

Features: Function effectively in sealing performance anywhere in the temperature range from minus 85 up to 275°F. Resistant to non-fuel petroleum products such as lubricating oils and hydraulic fluids.

Description: "Parker 42" compound is especially satisfactory for service with ozone since it has an ozone resistance of 0.003% for 6 hours. Tensile strength is 2000

STOP

ACCIDENTS

with **BRADY**

SAFETY SIGNS

Here's an AMAZING BRAND NEW SAFETY SIGN that will be welcomed by Safety Men! Brady Safety Signs stick to wood, glass, metal, concrete, etc. without moistening. May be applied to any clean surface in a jiffy. No screws, nails, bolts or skilled help necessary. All you do is peel from card, apply where wanted and the sign is up to stay.

Brady Safety Signs are made of durable cotton cloth, Silicone Coated to resist dirt, grime and moisture. CONFORM TO ASA Standard Z35.1-41. Select your requirements from a complete catalog of standard safety messages. Cost only a few cents per sign. Immediate delivery. Specials made to order.

WRITE FOR
Free
SAMPLES
AND
USEFUL
CATALOG

WIRE MARKERS
PIPE MARKERS
SAFETY SIGNS
PRINTED
"SCOTCH" TAPE
MASKS & STENCILS

MANUFACTURERS OF SELF-STICKING PRODUCTS

W.H. BRADY COMPANY

1635 E. SPRING STREET • CHIPPEWA FALLS, WIS.

When inquiring check CP 5257 on handy form, pgs. 2-3

Destination: Korea!

Battery of TRENT electrically heated ovens in which small glass ampoules are dried and sterilized before being filled with penicillin, streptomycin and sulphadiazine, principally for our armed forces.

Heat is produced by TRENT Patented "FOLDED-and-FORMED" Heating Elements, assuring absolute temperature uniformity, with complete freedom from maintenance.

"FOLDED-and-FORMED" Heating Elements are available in standard 12" x 12" racks for easy installation, horizontally or vertically, in multiples to meet any capacity requirement, at temperatures up to 1350°F. Five year guarantee.

TRENT INC.
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27 PA

When inquiring check CP 5258 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

psi, elongation 300%, Shore A hardness 60 (plus or minus 5°), and permanent set 3%.

Source: Seals made with new compound are products of The Parker Appliance Company, Dept. CP, 17325 Euclid Ave., Cleveland 12, Ohio. . . or for more information check CP 5259 on handy form, pages 2 and 3.

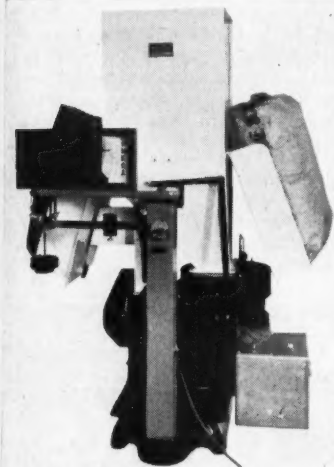
Dust creates no problem with fluoride feeder . . .

chemical bags need be lifted only 36" when charging; hopper holds two 100 lb bags

Uses: Feeding of fluoride chemicals to water supplies.

Features: Improvements include dustless filling, lower filling height (bags and drums do not have to be lifted as high as other models), and larger hopper that will hold two 100-lb bags of chemical or one 125-lb drum.

Description: As can be seen in photo, bag is placed on one of the two hopper doors, skewered in place at bottom, slit open at top.



Fluoridizer with both hinged doors loaded with bags of chemical. Disolver is on floor to right of scale

Drum is emptied in a similar fashion, but does not have to be fastened to door. Bags and drum have to be lifted only about 36".

The Model 47-A retains features of previous models, such as accuracy of feed, check of

quantity fed, positive volumetric displacement, simple mechanism and drive, simplified lubrication, wide feeding range, percentage adjustment of feed scale, and ability to be used with small or large dissolvers.

Source: Product of Omega Machine Company, Dept. CP, 345 Harris Ave., Providence 1, R. I. . . or for more information check CP 5260 on handy form, pages 2 and 3.

Presents various equipment used for treating air

Equipment needed for ventilating, air handling, and air conditioning — cooling, heating, dehumidifying, cleaning, filtering, and circulating — is covered in 16-page catalog. Units are representative of full line. Included are hermetically sealed compressors; condensers; water coolers; heating and cooling coils; V-belt ventilating sets; surface dehumidifiers; air washers; unit and industrial heaters; centrifugal, induced-draft and forced-draft fans; and inlet vane control assemblies.

Catalog SA-6692 is issued by Westinghouse Electric Corporation, Sturtevant Div., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 5261 on handy form, pages 2 and 3.

JUNE, 1951

caustic salt

Rinse water costs money—especially in the evaporator of an electrolytic caustic plant. The Sharples Super-D-Hydrator, with its completely automatic flexible operation, uses less rinse water to obtain low caustic concentration salt, thus costly steam is saved and the capacity of the evaporator is increased appreciably.

Two examples:

(1) On a feed slurry of 12-15% caustic soda, with 35-45% free sodium chloride, the Sharples Super-D-Hydrator produces sodium chloride with 0.15% (max.) caustic soda, and 2% (max.) moisture. Actual records show the use of but 25 gallons of rinse water per ton of dry sodium chloride produced.

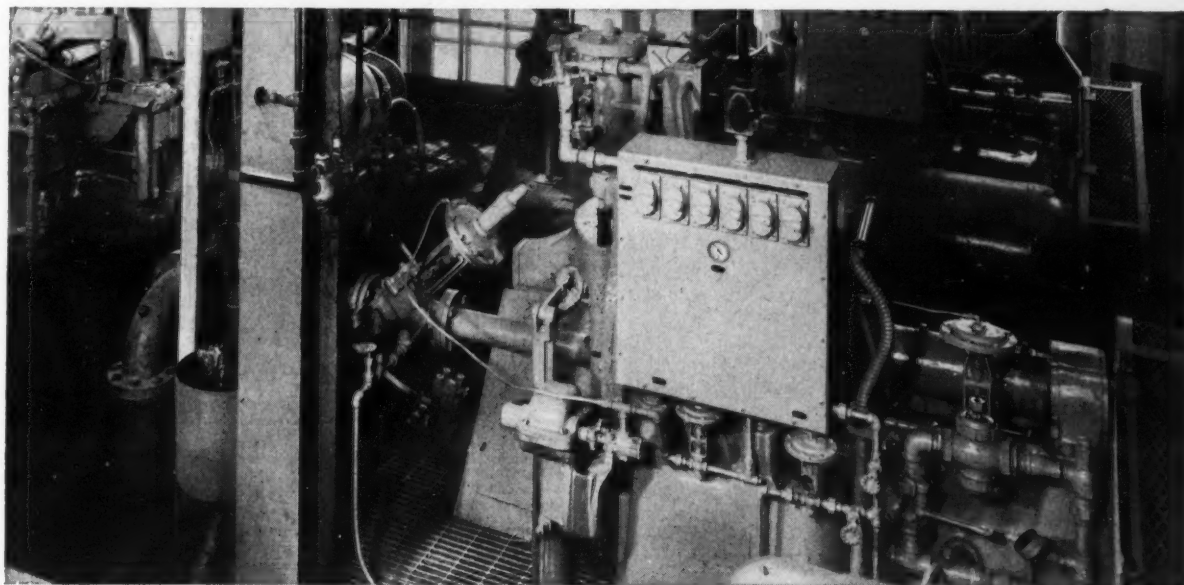
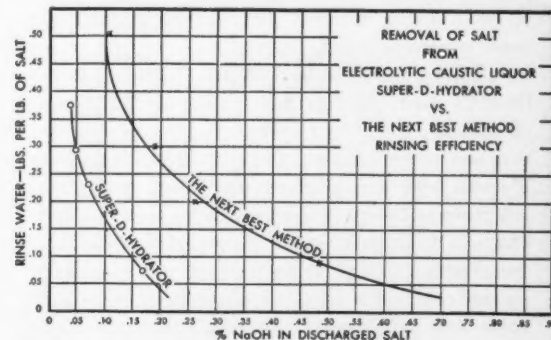
(2) On a 40% caustic soda slurry with 15-25% free sodium chloride, the Super-D-Hydrator produces salt with less than 0.40% caustic soda (max.) and less than 3% moisture—using but 45 gallons of rinse water per ton of sodium chloride produced.

These examples are typical of the high efficiency and economical operation of the Sharples Super-D-Hydrator.

Capacity ranges from 3000 lb./hr. of salt from 40%

caustic mother liquor for the C-20 Super-D-Hydrator, up to 10,000 lb./hr. from 15% caustic mother liquor for the C-27 Super-D-Hydrator.

For caustic salt and dozens of other crystal dehydration applications, the Super-D-Hydrator is the proved best answer to production and economy. Your inquiry will be given our prompt attention.



Super-D-Hydrator installation at Pennsylvania Salt Manufacturing Co., Wyandotte, Mich.

BOSTON
CLEVELAND
NEW ORLEANS
NEW YORK
DETROIT
SEATTLE
PITTSBURGH
CHICAGO
LOS ANGELES
SAN FRANCISCO
HOUSTON

SHARPLES
THE SHARPLES CORPORATION
2300 Westmoreland Street, Philadelphia 40, Pa.

When inquiring check CP 5262 on handy form, pgs. 2-3



THE LONG RANGE VIEW IS IMPORTANT, TOO!

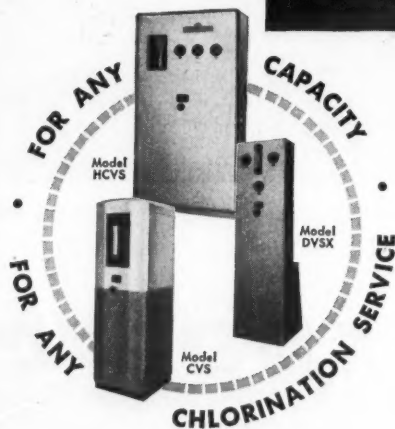
when buying or specifying chlorine gas feeders

In other words, how will the chlorinator stand up under continuous use?

Here's where BUILDERS VISIBLE FLOW CHLORINIZERS shine. Due to their unique design, these chlorinators meter and control chlorine gas in the dry, non-corrosive state. Dry, non-corrosive gas as it comes from the cylinder is regulated, controlled, and metered before it enters the bell jar where it first comes in contact with water. As a double protection, the chlorine control valve is lined with porcelain enamel and has a Tantalum diaphragm with silver valve seat and needle—materials that are completely unaffected by dry chlorine gas and highly resistant to moist chlorine gas.

Another feature is the unitized construction of Builders Chlorinizers. These chlorinators are built of separate assemblies . . . simple, integral units—easy to maintain, easy to replace. For complete information and Bulletins, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Prov. 1, R. I.

BUILDERS makes a complete line of flow meters and controllers for liquids, steam, air, gas, and dry materials . . . mechanical and differential . . . including The Venturi Meter and Chlorinizers (chlorine gas feeders).



BUILDERS-PROVIDENCE



When inquiring check CP 5263 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

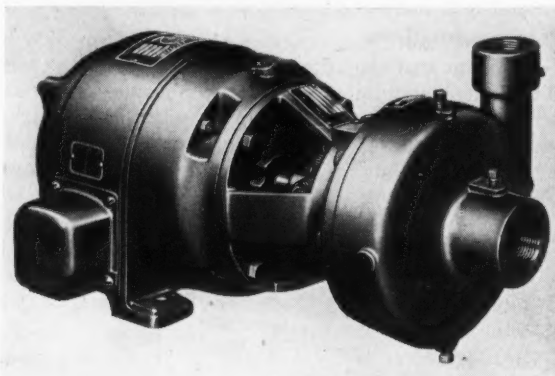
All wetted parts of pump are stainless steel . . .

built in $\frac{3}{4}$ to 1- $\frac{1}{2}$ " discharges; removal of few bolts permits easy servicing

Uses: For processing applications.

Features: All wetted parts constructed with type 316 stainless steel. Equipped with leakproof mechanical Teflon seal. Pump is easily serviced.

Description: Pump is constructed in $\frac{3}{4}$ to 1- $\frac{1}{2}$ " dis-



Stainless steel process pump

charge, with horsepower ranging from $\frac{1}{4}$, 1750 rpm to 2 hp, 3450 rpm. Standard motor, hydraulically balanced impeller, and spring type flexible coupling. Removal of

Atlantic Flexible Metal Hose Offers

FREEDOM FROM BREAKDOWNS

due to VIBRATION, MISALIGNMENT, EXPANSION, CONTRACTION.

—and is better for conveying steam, gases, molten chemicals, oils, refrigerators, tars, asphalt, alkalis, gasoline, light or semi-solids.

Seamless or Interlocking construction in steel, stainless steel, bronze, $\frac{1}{8}$ " — 36" I.D. with appropriate fittings.

Write for Bulletin 20D. See our Catalog in Sweet's File for Product Designers.

Atlantic Metal Hose Co., Inc.

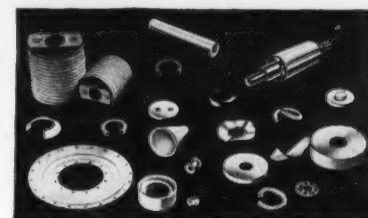
106 W. 64th St., New York 23, N. Y.

When inquiring check CP 5264 on handy form, pgs. 2-3

(advertisement)

Wider range of molded TEFLON shapes now available . . .

Crane Packing Company announces the availability of the "Chemlon" line of packings and gaskets made of the new material.



Uses: Chemlon "C-V" Rings especially suited to valve stem applications. They also give outstanding results on hydraulic applications with temperatures as high as 482°F. and in contact with extremely corrosive liquids and gases. Chemlon insulating parts for high frequency applications are also being molded and machined by Crane Packing Company.

Features: The cross-section design of Chemlon "C-V" Rings allows for effective sealing at low gland pressure. In many cases, finger-tip pressure is sufficient. When used on valve stems, Chemlon "C-V" Rings will last the life of the valve. As an insulator, the material offers high dielectric strength and low power factor.

Description: Chemlon "C-V" Rings and other molded and machined Chemlon parts are made from Teflon (duPonts new tetrafluoroethylene resin). After considerable research and pioneering in the molding of Teflon, Crane Packing Company is now molding Teflon in a wide range of sizes and shapes for many difficult industrial applications.

Source: Made by Crane Packing Company, Dept. CP, 1821 Cuyler Ave., Chicago 13, Illinois . . . or for more information write to company on firm letterhead.

(advertisement)

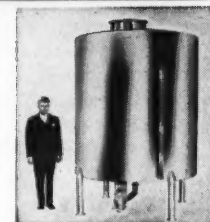
When inquiring check CP 5265 on handy form, pgs. 2-3

LOMAX STAINLESS STEEL STORAGE • MIXING TANKS • PROCESSING

LOWER FIRST COSTS

LOWER ALL-AROUND COSTS

Modern streamlined welded construction throughout. STOCK OR TO YOUR SPECIFICATIONS. All over the world chemical, food and beverage processors say, "When you buy Lomax; you buy Quality" . . . developed in more than a quarter-century of experience. It will pay you to get the facts.



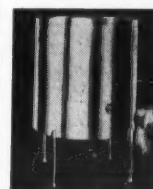
STORAGE TANKS: Stainless, Monel, Inconel, Clad. Any size; any capacity. Vertical, horizontal, stock or to order. Meet all sanitary requirements.

OUR ENGINEERS ARE AT YOUR SERVICE FOR FREE PLANNING & ESTIMATES.

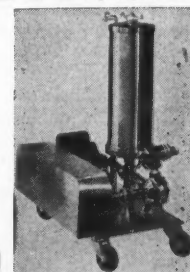
NEW 3-5 GAL PORTABLE FILTER

Handy, efficient, precision-built. Easily portable. Stainless steel and Nickel Alloy. $\frac{1}{4}$ hp motor. Reasonably-priced. Write for details.

ACT NOW FOR QUICK SHIPMENTS



TOP, SIDE OR BOTTOM AGITATING MIXING TANKS. A N Y CAPACITY. Write for special "THRIFTY" specifications.



FRANK B. **LOMAX CO. INC.**
3518 N. HALSTED ST., CHICAGO 13

EASTERN SALES REPS.
KURHAN CO., INC.
261 FIFTH AVE.
NEW YORK 16 N.Y.
PHONE Murray Hill 3-0935

When inquiring check CP 5266 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

three bolts permits separation into three parts for adjustment and servicing.

Source: Type #1522 centrifugal pumps are built by Bell & Gossett Co., Dept. CP, Morton Grove, Ill. . . . or for more information check CP 5267 on handy form, pages 2 and 3.

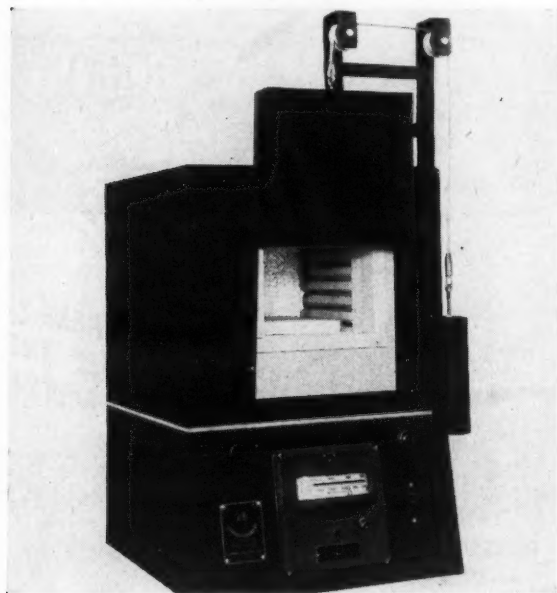
Operator has automatic control of furnace temperatures from 300 to 2,000° F . . .

eliminates need for additional controls to obtain temperatures below standard range

Uses: As a combination hardening and tempering furnace.

Features: "Infiltrator" and electronic controller is designed to give operator automatic control of temperatures ranging from 300 degrees up to and including 2,000°F. Heretofore on electric furnaces of this type the lower temperature could not be controlled without additional control equipment. Since it is possible to obtain temperatures below the standard range of electric furnaces, this furnace can be used in the oven temperature range for tempering. Furnace has been designed with an easy-to-operate counterweighted door which rides in a wedge slide to seal the door in the closed position. Heating elements are made of non-scaling, non-flaking high temperature coiled alloy wire. All contacts fully enclosed.

Description: Furnace is 8" wide x 6" high x 9" deep with maximum current consumption of 4 kw. It is wired for 220 volt single phase operation. Furnace is built as a



Combination furnace with counterweighted door

floor model 869FM and as a bench model 869ACB. It is also built as a model using maker's "Infiltrator" and an indicating pyrometer only 869-BMIF. In this case the low temperature range is raised to 1,000°F in place of the 300° which is obtained with standard arrangement.

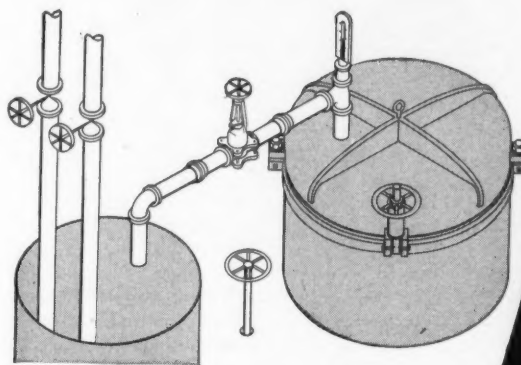
All units are shipped ready for operation.

Source: Combination hardening and tempering furnaces are built by K. H. Huppert Co., Dept. CP, 6830-32 Cottage Grove Ave., Chicago 37, Ill. . . . or for more information check CP 5268 on handy form, pages 2 and 3.

JUNE, 1951

for outstanding service like this

**Rely on
Dependable
CRANE VALVES**



The Installation—Phoenix Dye Works, Chicago, Ill.

PROBLEM: To find a durable replacement valve for dye line on package dye machine. Various cocks and valves tried, lasting only a maximum of 1 to 2 months, with much leakage, sticking, and maintenance.

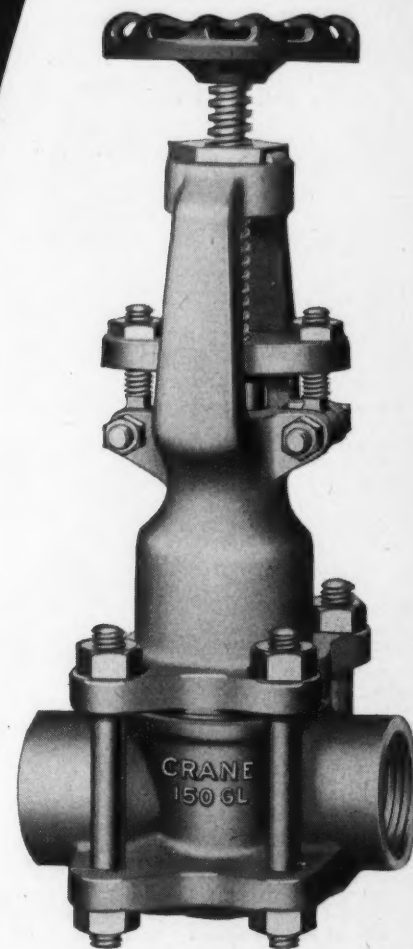
WORKING CONDITIONS: Valve almost constantly in contact with varying acid dye solutions, at temperatures ranging from 50 to 210 degrees F. Operated about 100 times daily, often with disc in throttling position.

SOLUTION: Crane No. 18850, all 18-8 Mo Stainless Steel Plug Gate Valve.

RESULT: User reports: after more than 3 years' uninterrupted service, no leakage through valve . . . no sign of corrosion . . . no maintenance expense . . . unusually easy operation. Enthusiastic about performance of Crane Plug Gate Valves.

... Another typical example of the long life and low-cost upkeep that Crane Quality Valves are famous for. And that's why . . .

More CRANE VALVES are used than any other make!



No. 18850 Crane 18-8 Mo Plug Gate Valve
for throttling or full-flow service. (No. 17750 in Monel.)
Send for new folder AD-1855.

CRANE CO.

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

General Offices:
836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving
All Industrial Areas

When inquiring check CP 5269 on handy form, pgs. 2-3

for
• SPRAYING • WASHING • RINSING • COOLING • AIR CONDITIONING

Get the most out of your Spraying Equipment with minimum power... with efficient spraying.

Use Yarway Nozzles. No internal vanes or other restrictions to clog or hinder flow. Two types—Yarway Involute-type producing a fine hollow spray with minimum energy loss, and Yarway Fan-type producing a flat fan-shaped spray with time-saving slicing action for cleaning.

Wide range of standard sizes and capacities. Cast or machined from solid bar stock.

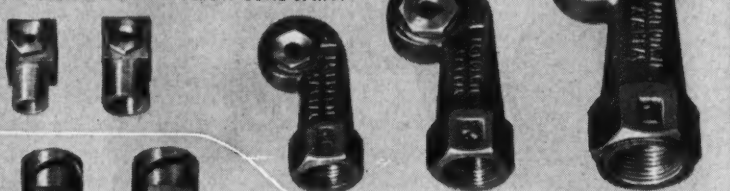
Thousands in use. Write for Bulletin N-616.

YARWAY SPRAY NOZZLES

YARNALL-WARING COMPANY

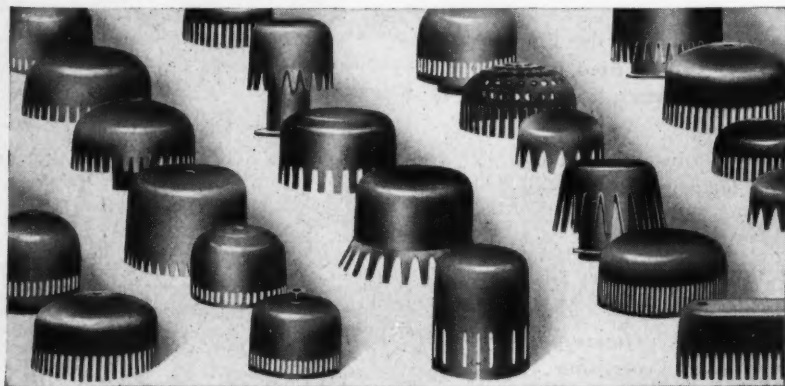
125 Mermaid Avenue, Philadelphia 18, Pa.

INVOLUTE-TYPE FOR HOLLOW CONE SPRAY



FAN-TYPE FOR FLAT SLICING SPRAY

When inquiring check CP 5270 on handy form, pgs. 2-3



SEND FOR PSC BUBBLE CAP BULLETIN 21

Largest Compilation of Engineering Data.

Lists 200 Styles Furnished Without Die Cost.

This standard reference contains complete specification information for over 200 standard styles of bubble caps and risers. Also drawings for use in determining methods of tray assembly. All styles list-

ed in Bulletin 21 are furnished promptly, without die cost, and in any alloy to meet your coking or corrosion problems. Special caps gladly designed; write as to your needs.

THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.



Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints

When inquiring check CP 5271 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Temperature uniformity, thermostat response of lab oven improved...

302, 18-8 stainless steel inside and out

Uses: Forced draft lab oven.

Features: Better uniformity of temperature and improved thermostat response.

Description: Multi-blade blower wheel and ball bearing motor provide continuous circulation of the air inside heating chamber.

Power selector switch, which allows instant selection of low, medium or high current input, is incorporated in the unit. Construction is of type 302, 18-8 stainless steel inside and out.

Source: Schaar & Company, Dept. CP, 754 W. Lexington St., Chicago 7, Ill. . . . or for more information check CP 5272 on handy form, pages 2 and 3.

Dispensing silica gel through locking cover protects purity...

special head fits 30 gal metal drums

Uses: Replaces regular cover on a standard 30-gallon metal barrel to convert it to a sanitary moisture-controlled



Placing cover on drum

unit that allows instant access to contents for dispensing.

Features: Prevents contamination and deterioration of materials.

Description: Air-tight gravity-locking door is of steel construction, finished in gray hammertone. Rubber gaskets seal rim and trap door.

Source: Dispenser head for silica gel and chemical metal barrels is built by Cargo Packers, Inc., Special Products Div., Dept. CP, 315 West 13th St., New York 14, N. Y. . . . or for more information check CP 5273 on handy form, pages 2 and 3.

IS VACUUM

That's 99.99% Perfect

good enough for your process?

This degree of vacuum is easily obtained with the Croll-Reynolds four or five-stage steam jet EVAC-TOR, with no moving parts. Each stage from a technical standpoint is as simple as the valve that turns it on. Numerous four-stage units are maintaining industrial vacuum down to 0.2 mm, and less, and many thousands of one, two and three-stage units are maintaining vacuum for intermediate industrial requirements on practically all types of processing equipment.



By permitting water, aqueous solutions or any volatile liquid to evaporate under high vacuum and without heat from an outside source, enough BTU's can be removed to chill the liquid down to 32°F., or even lower in the case of solutions. This is the principle of the Croll-Reynolds "Chill-Vector." Hundreds of these have been installed throughout the United States and in several foreign countries.

An engineering staff of many years experience has specialized on this type of equipment, and is at your service. Why not write today, outlining your vacuum problem.



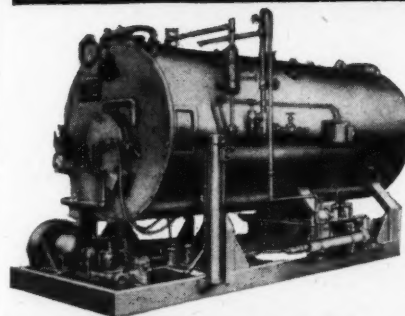
CROLL-REYNOLDS CO., INC.

17 John Street, New York 38, N. Y.

Chill-Vectors • Steam Jet Evactors • Condensing Equipment

When inquiring check CP 5274 on handy form, pgs. 2-3

MODERNIZE with the AMESTEAM GENERATOR



HERE ARE THE FACTS!

• COMPLETE • COMPACT
• ACCESSIBLE • EFFICIENT
• AUTOMATIC

10 to 500 h. p. —
15 to 200 lbs. capacities

WRITE FOR
YOUR COPY

AMES IRON WORKS

BOX 606 OSWEGO, N. Y.

Builders of Better Boilers since 1848
Manufactured under
License in Canada by VOLCANO, Ltd., Montreal, P. Q.

When inquiring check CP 5275 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

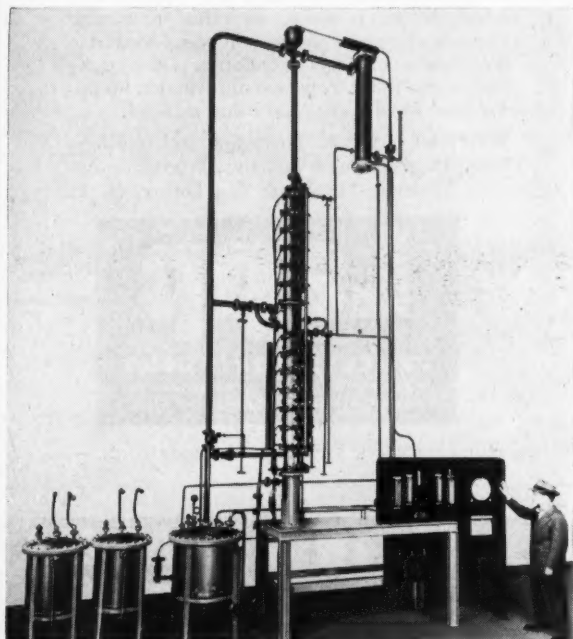
Lower section of lab still can be used alone or with top section . . .

temperature of each plate in lower section can be recorded; control is all from one board

Uses: Laboratory distillation unit.

Features: Entire column may be used or, if desired, only the lower section. Upper and lower section are so connected that upper can be shut off entirely from the system.

Description: There is a temperature recorder for each plate in the lower section of the Model B-11 laboratory



Laboratory distillation unit is controlled from one panelboard distillation unit. One switch controls automatic sampler valves on each plate of lower section. All valves operate from control board. Unit has steam pressure controller for kettle, and uses separate receiving tanks for scale mounting. All meters are mounted on the control board.

Source: Brighton Copper Works, Inc., Dept. CP, Cincinnati, Ohio, is the maker. . . or for more information check CP 5276 on handy form, pages 2 and 3.

Cool, washable safety caps protect women workers . . .

guard against hazards of hair catching in machinery; elastic band model fits all head sizes

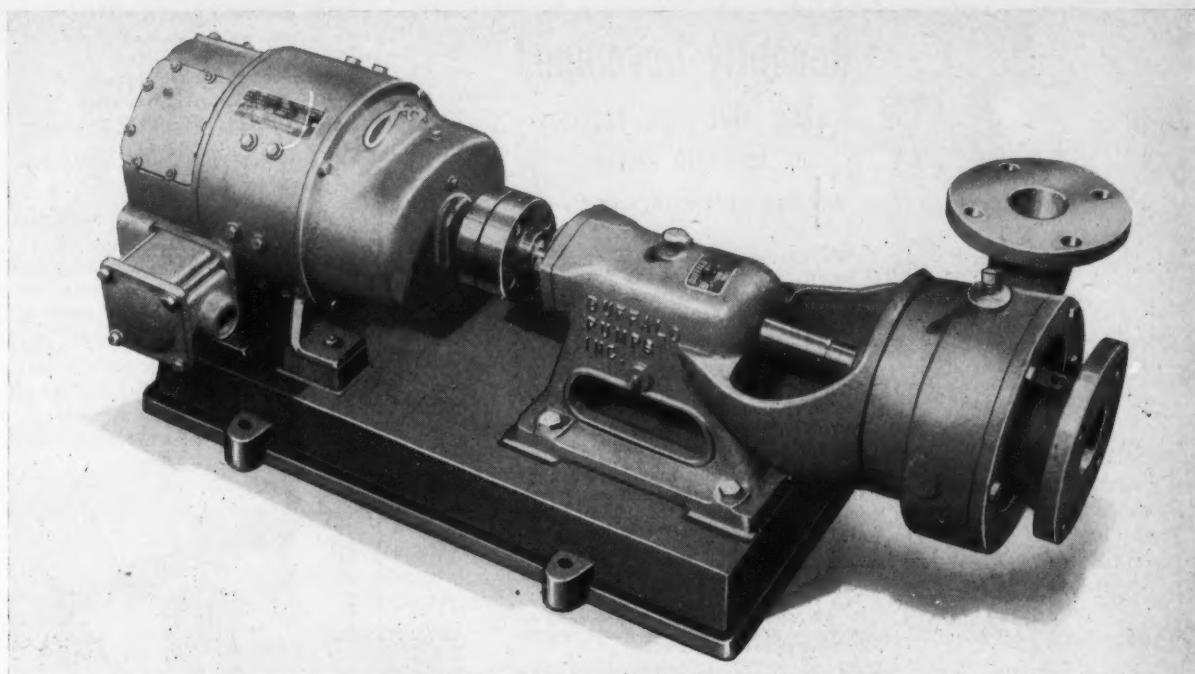
Uses: As safety caps for female workers. Keep hair out of machinery.

Features: Cool, washable, and durable enough for continuous use. Made from vegetable fiber material which will not dissolve in water or live steam. They can be autoclaved, sterilized in boiling water.

Description: Caps are securely finished with an elastic to fit all size heads.

Source: G-S 32 caps are made by General Scientific Equipment Co., Dept. CP, 2700 West Huntingdon St., Philadelphia 32, Pa. . . or for more information check CP 5277 on handy form, pages 2 and 3.

JUNE, 1951

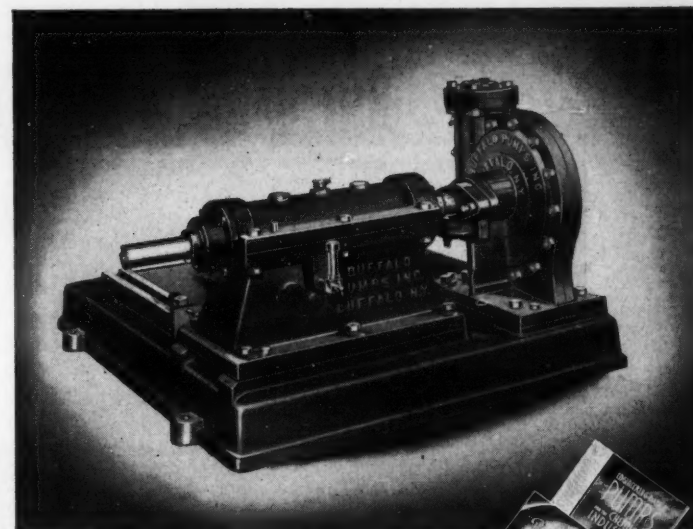


"Buffalo" Full Ball Bearing Single Suction Pump

BUILT FOR *HARD* CHEMICAL SERVICE

- Overall strength for high impeller speeds and casing pressures.
- Available in special alloys for the chemicals you handle.

From every point of view, these "Buffalo" Chemical Pumps are a good buy. Their overall rugged construction means long life. Their enclosed type impellers are inherently high in efficiency, yet not subject to wear from close running tolerances. Ball bearings mean smooth operation. Stuffing boxes on the "Buffalo" Lead-acid Pump at right are not less than 3" deep; those of the pump above, not less than 2" deep. For best results on any chemical liquid, specify "Buffalo" and be sure!



"Buffalo" Lead-Acid Pump

WRITE FOR BULLETIN 982 on the complete line of "Buffalo" Chemical Pumps; and Bulletin 976-D on Full Ball Bearing Pumps.

"Buffalo" PUMPS
BUFFALO PUMPS INC.

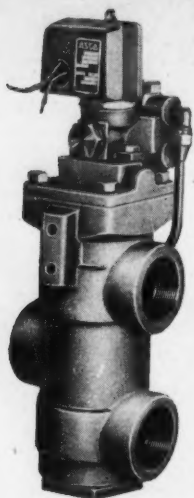
524 BROADWAY

BUFFALO, NEW YORK

Canada Pumps Ltd., Kitchener, Ont.

A BETTER CENTRIFUGAL PUMP FOR EVERY LIQUID

When inquiring check CP 5278 on handy form, pgs. 2-3



Recently Developed

3-WAY FULL AREA, PACKLESS
SOLENOID VALVES

PIPE SIZES: 1, 1 1/4, 1 1/2 and 2 inches

We recommend this valve for controlling equipment where pressure must be alternately applied and exhausted as, for example, with diaphragm motor valves, air or hydraulic cylinders, etc. Classed as Bulletin 8331 ASCO Valves, here are a few specifications: maximum pressure 125 to 250 pounds; minimum pressure 10 to 20 pounds. Suitable for handling air, water, gas, oil and other non-corrosive gases or liquids up to 180°F.

Since the automatic control of any alternating application and release of pressure is so important for efficient operation, we suggest that you bring your problems to the attention of our engineers whose experience goes back nearly 40 years.

If you have recurrent and varying needs for automatic control valves, you should have our General Valve Catalog No. 23.



When in need of Automatic Transfer Switches, Remote Control Switches, Contactors, Relays, and Specialized Electromagnetic Controls, come to us.

Automatic Switch Co.

379 LAKESIDE AVENUE • ORANGE, NEW JERSEY

When inquiring check CP 5279 on handy form, pgs. 2-3

The Home of CUSTOM-MADE PRODUCTS

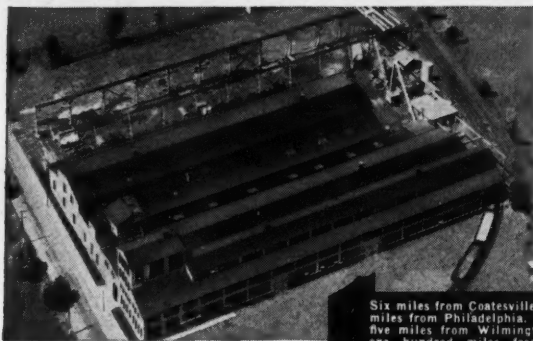


Plate Fabrication and Heat Exchangers

Nearly 40 years ago the present management of DOWNTOWN IRON WORKS, INC. began to attain, and then maintain, the reputation of being "among the finest in their field"; i.e., Steel Plate Fabrication. We, of DOWNTOWN, take justifiable pride in knowing that through these years we have never once sacrificed quality for price. The many developments in the variety of metals and methods of fabricating these metals have made our work most interesting, and we also like to feel that we have contributed, in a small

Six miles from Coatesville, thirty miles from Philadelphia, twenty-five miles from Wilmington and one hundred miles from New York City lies the strategically located home of Downingtown Iron Works. Nearby Steel Producing Centers provide necessary raw materials. An industrial and home community supplies skilled labor and the main line of the Pennsylvania Railroad assures excellent transportation facilities.

way, to advancing the economy of our Country. Our Heat Transfer Division, started in 1941, is maintained under the direction and supervision of men thoroughly trained and experienced in this line. Heat Transfer Equipment of DOWNTOWN design is sold on a guaranteed performance basis or we will fabricate to customer's drawings. Useful literature gladly sent upon request on your Business Letterhead. May we be of help to you? Remember, "Your needs are our Speciality!"

DOWNTOWN IRON WORKS, INC.

DOWNTOWN, PA.

NEW YORK OFFICE, 30 CHURCH STREET

When inquiring check CP 5280 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Instrument piping areas,
other cramped spots can
use 1/2" gauge valve . . .**

has male inlet and female outlet;
uses no nipples

Uses: Offered as an addition to line of forged steel gauge valves in 1/2" size. Overall compactness makes it desirable for cramped areas like in instrument piping or for installation of manufacturer's equipment.

Features: Requires no nipples, as for example, when hooking up pressure gauges to pressure tubing or casing, because the male inlet basically



Steel gate valve with male inlet

serves the same purpose as a nipple. Male inlet is an integral part of forged steel valve body offering greater strength and soundness. Wall thickness of male inlet is extra heavy for high pressures and provides greater protection against breaking off or rupturing.

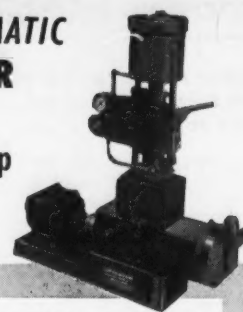
Description: This modified model is otherwise identical in design to maker's other gauge valves with female connections on both ends which serve Christmas trees, meter, dead end, instrument and other small pipelines, pumps, vents, separators, diesels and gas engines.

Valve has a long-taper, semi-needle 13% chromium stainless steel stem-disc with fine pitch thread for close regulation of flow; also backseating shoulder for repacking under pressure; extra broad seat joint for tight closure; and bonnet and packing nut EValized (plated) to reduce possible galling and corrosion. Ratings are 4,000 lb at 150°F or 600 lb at 750°F for these valves.

Source: Valve Fig. 152J and angle Fig. 153J are built by Edwards Valves, Inc., Dept. CP, East Chicago, Ind., or for more information check CP 5281 on handy form, pages 2 and 3.

Lapp AUTO-PNEUMATIC PULSAFEEDER

piston-diaphragm
metering chemical pump
with automatic output
control



Applicable to all pneumatic or electro-pneumatic instrumentation. Provides automatic metering in response to variable flow, pH, temperature, liquid levels, pressure, or other processing variables. Operates at constant speed—variable flow results only from variation in piston stroke length, controlled by pneumatic cylinder. Pumping head isolates chemical being pumped.

WRITE for complete description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 418 Maple St., LeRoy, N. Y.

Lapp

PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS

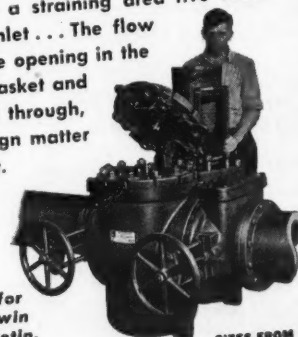
PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 5282 on handy form, pgs. 2-3

ELLIOTT TWIN STRAINERS TYPE "A"

Streamline flow cuts pressure drop

■ The two cylinders in Elliott Twin Strainers are so located as to require the very minimum diversion from straight through flow between inlet and outlet . . . The extra large baskets have a straining area five times that of the inlet . . . The flow enters a large opening in the side of the basket and goes straight through, leaving foreign matter in the basket.



Get all the
story. Write for
the Type A Twin
Strainer Bulletin.

SIZES FROM
1" UP-125 to 250 lb.
PRESSURES

A-313



ELLIOTT COMPANY

Accessories Dept., JEANNETTE, PA.
DISTRICT OFFICES IN PRINCIPAL CITIES

When inquiring check CP 5283 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Easily applied, pleasant cream compounded to protect workers against dermatoses . . .

combats irritations caused by solvents, dyes, chemicals, abrasives, resins and glues

Uses: Especially suited for applications involving occupational dermatoses caused by cutting oils, solvents, coolants, abrasives, chemicals, dyes, plastics, resins and glues.

Features: Although basically a treatment to clear up skin irritations already in evidence, it is suitable for use as a prophylactic to further protect workers from recurrence of irritations.

Description: Vanishing cream base, clean and pleasant in application.

Source: Tarbonis is made by The Tarbonis Co., Dept. CP, 4300 Euclid Ave., Cleveland, Ohio . . . or for more information check CP 5284 on handy form, pages 2 and 3.

Filters and removes vapors from air and gas in pipe lines . . .

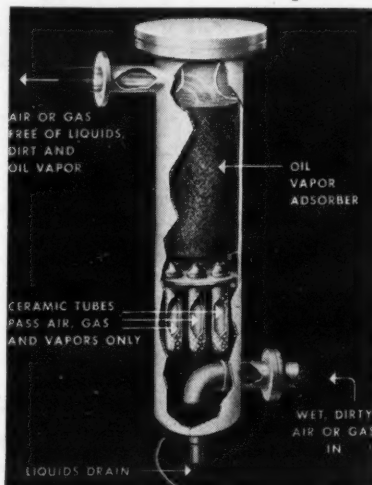
flow passes through ceramic filters and activated carbon adsorber

Uses: Removes petroleum vapor, water, free oil, water-oil emulsions and dirt from compressed air and gas lines. For installation in lines to instruments and critical pneumatic operations.

Features: Liquid-impervious ceramic filters operate in conjunction with specially compounded activated carbon. No moving parts.

Description: Illustration shows flow through the Vape-Sorber. Water, free oil, water-oil emulsions and dirt are first removed by ceramic filters that have little pressure drop.

This part of the unit is similar to manufacturer's Liquid-jector.



Cutaway drawing of filter-adsorber for air and gas lines

Then, petroleum vapors are removed by passing the air or gas through the activated carbon adsorption chamber. Filters are conveniently cleaned, and adsorption chamber is readily recharged.

Three standard models are available, all for use with maximum inlet pressure of 150 psi. Free air capacities range from 100 to 500 cfm. Smallest unit's inlet and outlet pipe size is 1" NPT, second smallest is 2" NPT, largest is 2½" flanged.

Source: Development of Selas Corporation of America, Dept. CP, Erie Ave. and D St., Philadelphia 34, Pa. . . . or for more information check CP 5285 on handy form, pages 2 and 3.

JUNE, 1951

pointers

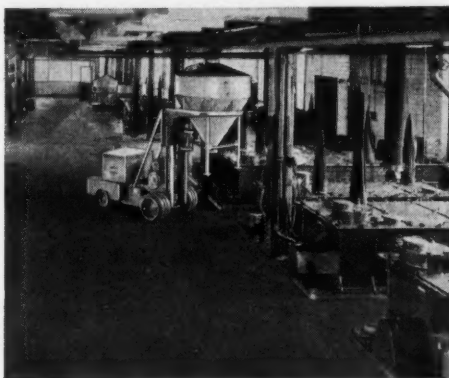
to BETTER PROCESSING

EQUIPMENT INFORMATION FOR PROCESSING PLANTS

Modern "Mix" Room at General Aniline Works, Rensselaer, N. Y.

—helps streamline the production of AZO DYES in country's oldest dye plant.

Sprout-Waldron Horizontal Batch Mixers receive the dye product after it comes from grinders. Here it is "standard-



ized" by addition of shading colors and reducing agents to match dye type. After mixing operation is completed, final product batch is sent to the weigher and prepared for shipment.

It's applications such as this that have established Sprout-Waldron as headquarters for mixing equipment. Consult with Sprout-Waldron on your requirements.

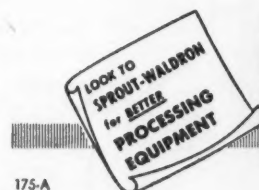
For further information about any of the equipment described, write to Sprout, Waldron & Co., Inc., 10 Waldron St., Muncy, Pa.

Sprout-Waldron

Manufacturing Engineers

SINCE 1866

MUNCY • PENNSYLVANIA



175-A



SIZE REDUCTION

MIXING & BLENDING

BULK MATERIALS HANDLING

PRODUCT CLASSIFICATION

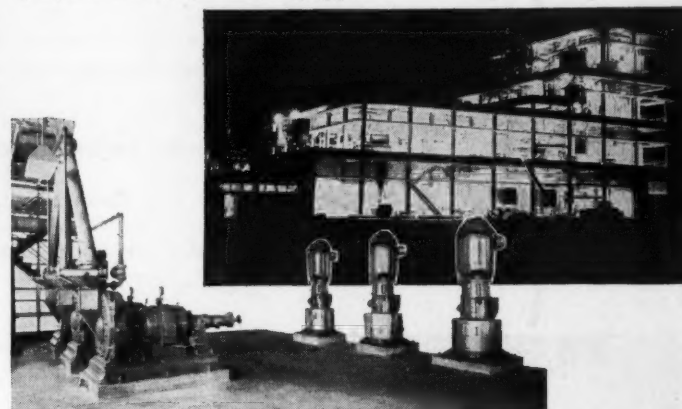
PELLETING & CURING

When inquiring check CP 5286 on handy form, pgs. 2-3

New Corn Products Plant Modernizes Starch and Sugar Production

The "Bluebonnet" plant at Corpus Christi, Tex., made headlines—not only because of its unique wall-less construction. Of even greater interest to the process industry are the much improved, continuous methods used to transform Milo Maize into starch and sugar. The engineers of Corn Products Refining Company broke with tradition—sought and found a better way to make starch!

Here, the old conventional stone-type buhr mill was replaced with modern-day degerminating mills, disintegrators, and repulpers . . . all specially equipped for starch processing.



At Corpus Christi, six Sprout-Waldron 36" single disc degerminating mills handle the full plant load of incoming grain; freeing the germ from the kernel without crushing it. After separation, three disintegrators and two S-W36" double disc repulpers take over and together do a job that formerly required six buhr mills, moisture expellers, and a three-stage coarse fiber washing station to get the same results.

Engineers of the "Bluebonnet" plant point out that the use of Sprout-Waldron repulpers, in combination with disintegrators, improves the recovery of starch, decreases maintenance costs, and requires considerably less floor space than previous methods.

Why not bring your size reduction problems to Sprout-Waldron? Our broad experience may be helpful to you, too!

SWECO SEPARATOR VIBRATING SCREEN

*years ahead in solving
processing problems*

- Spiral-uphill motion insures production capacities with laboratory accuracy of product.
- Designed with only three (3) moving parts.
- Separate wet or dry from 1 mesh to 400 mesh.
- Consumes less power than 200-watt light bulb.
- Eliminate plant shutdown — guaranteed screen cloth life.
- No transmitted vibration — mount unit on skids, wheels, tall building, top of bins, wood floors, etc.
- Explosion proof totally enclosed motor.
- Tumbled material — no floating dust.
- Triple screen capacity per sq. ft. of area.



Model E-30

*Reduce your costs and increase
your profits and plant efficiency
with the SWECO Separator.
Send for complete information.*



SEPARATOR DIVISION, DEPT. CP
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Avenue, Los Angeles 58, Calif.

Name Dept.
Company
Address
City Zone .. State
Request information regarding separation of
wet ☐ or dry ☐ on single ☐ or multiple ☐ Deck Sweco using
mesh cloth at Lbs. ☐ or Ton ☐ capacity per hour ☐ per
minute ☐.

Used in the following, and many other, type plants: Ceramic; Detergents; Sulphur; Fertilizer; Aggregates; Perlite; Tungsten Ore; Magnesium Oxide; Potassium Sulfide; Sodium Carbonate; Dry Clay; Ground Glass; Abrasive Cleaners; Pumice; Waste Disposal; Catalyst.

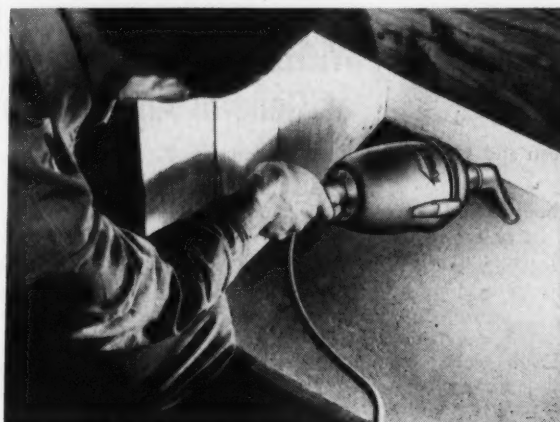
When inquiring check CP 5287 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Only air needed to operate
hand-type vacuum cleaner . . .**

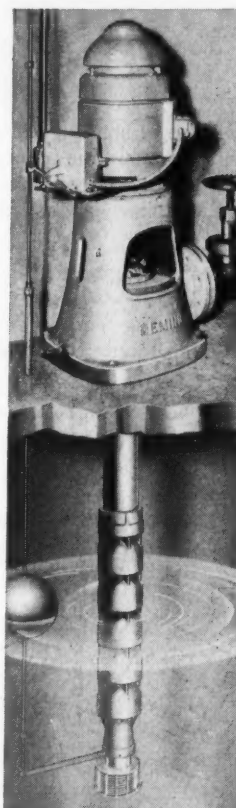
connects to any air line with pressure of 75-160 lb
Uses: For cleaning bins, racks, storage boxes, shelves and machines.

Features: No moving parts, no motors, belts or brushes. Unit uses controlled air jet to provide cleaning action.



Hand cleaner reaches "hard-to-get-at" areas

May be used under conditions where an electric cleaner might involve explosion hazards. Dirt collector bag is inside cleaner so it does not come in contact with areas being cleaned and soil them. It is easily emptied. Cleaner



Versatile SUMP PUMP

• Advantages of this Deming Vertical Turbine Sump Pump include high efficiency, compactness, simplified installation, elimination of priming devices, and low maintenance costs.

Uses include high service pumping, recirculation, cooling, drainage, process pumping and similar industrial uses. Capacities range from 15 to 3500 G.P.M. at pressures up to 175 lbs. Various types of drive are available to take advantage of most economical source of power. For complete details, write for data on Figure 4700 Vertical Turbine Sump Pump.

THE DEMING COMPANY
522 BROADWAY • SALEM, OHIO



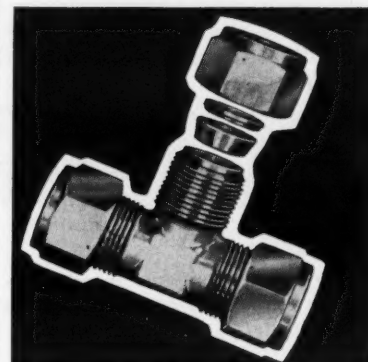
**DEMING
PUMPS**

When inquiring check CP 5288 on handy form, pgs. 2-3

**IS CORROSION
YOUR PROBLEM?**



**STANDARDIZE ON
Swagelok^{*}
TUBE FITTINGS**



When you make every tube connection a Swagelok connection you relieve yourself of bothersome small leaks in instrumentation lines. In addition, by standardizing on Swagelok fittings inventories are reduced and control simplified, component parts are interchangeable and tube connections are made faster and easier. Swagelok fittings form a leakproof, torque-free seal with one and one quarter turns.

FREE—For complete details and descriptive literature write Dept. BC

^{*} Patented

CRAWFORD FITTING CO.
884 E. 140th Street, Cleveland 10, Ohio

SWAGelok FITTINGS AVAILABLE IN: BRASS, ALUMINUM, STEEL, STAINLESS STEEL, MONEL



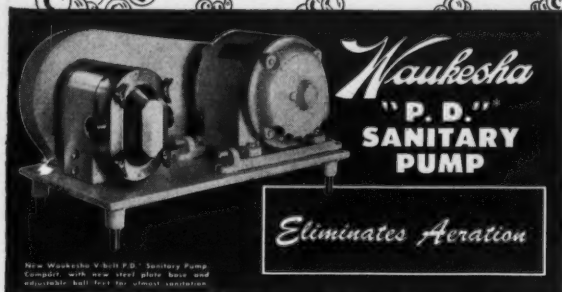
**COME TO YOU COMPLETELY ASSEMBLED,
FINGER TIGHT**

When inquiring check CP 5289
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Bubbles have their place

But NOT in YOUR PRODUCT



Eliminates Aeration

You'll get no bubbles, no aeration, no agitation in your product when you use the new Waukesha Sanitary Pump. Your product comes out exactly as it goes in. With Twin-Impeller type of pumping, no air can be taken in, nor can bubbles form in the product pumped. The slow, gentle, positive, smooth, pulsation-less flow protects the quality and consistency of your product.

Write for the complete story on the NEW Waukesha P.D.* Sanitary Pump.

*P.D.—Positive Displacement for smooth flow.

**WAUKESHA
FOUNDRY
CO.**

Waukesha, Wisconsin

**Waukesha 100%
SANITARY
PUMPS**
Dependable Product of a Responsible Manufacturer

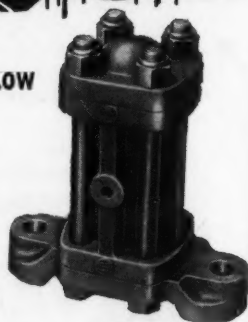
When inquiring check CP 5290 on handy form, pgs. 2-3

SPO AIR VIBRATORS

ASSURE POSITIVE MATERIALS FLOW

Bins, hoppers, and chutes handling powdered or granular materials function at peak efficiency when SPO Series 81 pneumatic vibrators are utilized. These dependable, low-cost vibrators deliver hammer-like impacts to prevent clogging or packing, and they assure a positive flow of materials to meet all production demands.

Designed to withstand continual hard usage, SPO vibrators operate on standard line pressures and feature full-power starting, high-speed operation, low air consumption, and a long trouble-free service life.



WRITE FOR BULLETIN 50
FOR COMPLETE DETAILS



New BULLETIN 50 contains data and specifications on standard line of SPO air vibrators.



INCORPORATED

6531 GRAND DIVISION AVE. CLEVELAND 25, OHIO

When inquiring check CP 5291 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

is made of aluminum and plastic stampings; together with fittings and 12' hose weighs but 3 lb.

Description: Diameter of cleaner is 5"; overall length, 18". Pipe threads on hose fittings are 1/4". At 100 psi, air consumption is about 4 1/2 cfm.

Source: Air pressure hand vacuum cleaner is made by Syntron Co., Dept. CP, Homer City, Pa. . . or for more information check CP 5292 on handy form, pages 2 and 3.

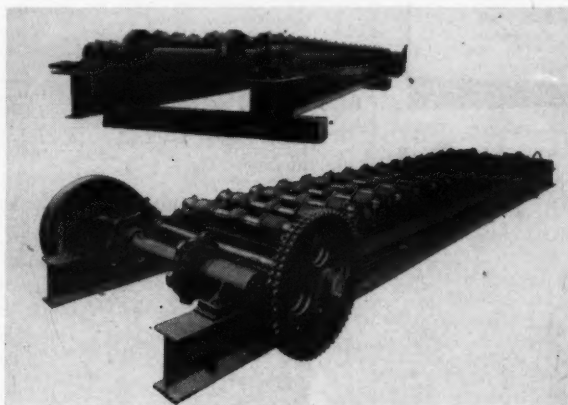
Tubing carries lubricants to bearing fittings of steel pan feeders . . .

offered in addition to system requiring lubrication of fittings separately at each point

Uses: For lubricating heavy duty manganese steel pan feeders.

Features: Development of these new systems gives users of this equipment option of three methods of lubrication from which to choose.

Description: In the first of these two systems, tubing is brought out to one side of the feeder, and each bearing is individually lubricated through Alemite fittings in which



Tubing systems speed feeder lubrication

the individual tubes terminate (see top photo). In the second system, tubing is brought out to one side and all tubes terminate in a central system, whereby all bearings are lubricated simultaneously from a pressure tank (see bottom photo). Previously each bearing was equipped with an Alemite fitting and separate lubrication was required at each point.

Source: Feeder systems incorporating any one of the three systems of lubrication are built by Pioneer Engineering Works, Dept. CP, 1499 Central Ave., Minneapolis 13, Minn. . . or for more information check CP 5293 on handy form, pages 2 and 3.

Presents conduit system for underground pipe

Eight-page illustrated bulletin specifies a complete conduit system for the protection, support, and insulation of underground pipe lines, either hot or cold. System features monolithic base, emergency internal drain, and pipe supports carried by the base which do not stress the conduit in any way. Bulletin 511 is issued by H. W. Porter & Co., Inc. — Reid Hayden, Inc., Dept. CP, 825 Frelinghuysen Ave., Newark 5, N. J. When inquiring specify CP 5294 on handy form, pages 2 and 3.

The Handy Durable RIGID Bench Yoke Vise

**It's got what you need
for easy work**



● You save time and effort with this more-for-your-money **RIGID** Bench Vise. Right where you need 'em are its integral pipe rest and benders that won't flatten pipe—and heat-treated tool-steel LonGrip jaws mean you don't have to be so fussy with polished pipe. Special malleable frame, extra durable. 8 sizes to 6" pipe, bench, post, stand and Tristand models, yoke and chain. Order from your Supply House.

RIGID

★ **Work-Saver Pipe Tools** ★

THE RIGID TOOL CO., ELTRA, OHIO

When inquiring check CP 5295 on handy form, pgs. 2-3

✓ Check the advantages of Durametallic Packings

✓ IS IT LUBRICATED THRUOUT - AND WEARS LIKE A BEARING ?	Yes
✓ WILL IT OPERATE WITHOUT SCORING SHAFTS, SLEEVES OR STEMS ?	Yes
✓ IS IT PRECISION MADE - READY TO INSTALL IN MY STUFFING BOX ?	Yes
✓ ARE THERE TYPES AND STYLES FOR SEALING SPECIFIC CONDITIONS ?	Yes
✓ IS IT ECONOMICAL - CAPABLE OF LONG UNINTERRUPTED RUNS ... ?	Yes

Prove this to yourself on your own equipment. Write for information on special types and styles of Durametallic Packings for your sealing needs. Ask for Bulletin No. DMCP. Durametallic Corporation, Kalamazoo, Michigan.

When inquiring check CP 5296 on handy form, pgs. 2-3

GET YOUR *Filter Facts* STRAIGHT

Despite claims for other filter types as to better filtering rates, faster operation, easier cleaning, etc., the facts prove the filter press a better overall investment, doing its consistently good job in more places on a greater variety of products under a broader range of operating conditions than any other filtering equipment ever developed. That's worth thinking about.

STRAIGHT FACTS ON SHRIVER FILTER PRESSES

- Lowest in cost per square foot of filtering area.
- Versatile—can be used on any filterable material, no matter how heavy, thick or viscous.
- Recovers solids — reasonably dry, firm, easy to handle.
- Clarifies perfectly, decolorizes, deodorizes, germproofs.
- Washes, extracts, to recover or remove soluble contents. Steams, melts or redissolves cake.
- Designed in any capacity, for any temperature and any pressure up to 1000 p.s.i.
- Made of any metal, wood, rubber, plastic for use with any filter media.

Shriver Filter Presses

T. SHRIVER & CO., Inc.
846 Hamilton St.
Harrison, N. J.

- ☐ Send me "Filter Facts" regularly.
- ☐ Send me the Shriver Catalog.

Name.....
Title.....
Firm.....
Address.....
City..... Zone..... State.....

When inquiring check CP 5297 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Grease fitting caps keep dust, dirt out, protect bearings...

made of flexible plastic, slip on, off easily

Uses: Bar entry of dirt or grit into grease fittings.

Features: Molded of black Vinylite, caps are impervious to oil, grease and gasoline. They can easily be slipped on or off the fitting and can be used over and over again.

Description: Three different fittings are offered for use on 1/8" fittings of dot, hydraulic and button head types. Bulletin P-5103 gives complete specifications.

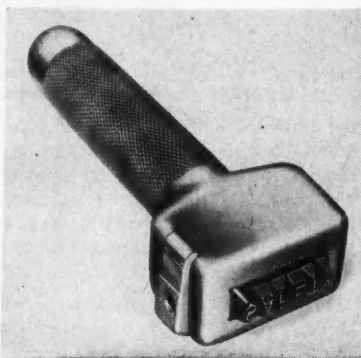
Source: Elastoplastic caps are made by The S. S. White Plastics Division, Dental Mfg. Co., Dept. CP, 10 East 40 St., New York 16, N. Y. . . . or for more information check CP 5298 on handy form, pages 2 & 3.

Round, knurled handle of type holder offers firm grip . . .

special steel resists spalling and mushrooming

Uses: For stamping legends on metal, wood, plastics, etc.

Features: Round, knurled handle permits workman to obtain a full grasp and firm grip. Holder is made of



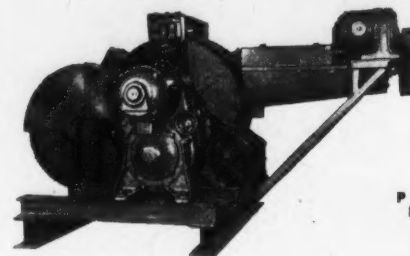
Round-shank type holder

special steel that resists spalling and mushrooming.

Description: The Model RS holder has a quick-change snap slide for changing type inserts and for retaining the type pin in holder. It can be made for one or two lines of type, with any size character.

Source: Made by M. E. Cunningham Company, Dept. CP, 117 E. Carson St., Pittsburgh, Pa. . . . or for more information check CP 5299 on handy form, pages 2 and 3.

ROTARY DEWATERING PRESS CONTINUOUS TYPE Greater Capacity — Recovery — Efficiency Profits — Delivers a Drier Product



P & L Rotary
Dewatering
Press

Available in four models—two sizes—either 5 or 10 ton rated capacity.

Most efficient method of extracting bulk water from semi-solids for profit in by-products and dehydrating operations.

Low Power Consumption—All Steel—Conserves Weight and Space.

Manufacturers of

Exhaust Boxes • Hammer Mills • Cookers
Reduction Equipment from "Bin to Sack"
Dewatering Press, Etc.

P & L WELDING & MACHINE WORKS

Phone Anaheim 4311

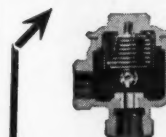
519 East LaPalma St.

ANAHEIM, CALIF.

When inquiring check CP 5300 on handy form, pgs. 2-3

Send for Nicholson

TRAP CATALOG 250



A Standard Reference on
Traps for All Applications

Newly revised, this 32-page reference describes traps for all mediums and pressures: thermostatic and metal expansion for pressures to 225 lbs.; weight and piston-operated for heavy duty. Complete with installation



TRAP DATA at your fingertips

CATALOG NO. 250
W. H. NICHOLSON & CO.
WILKES-BARRE, PA.

diagrams and formulae for determining proper size trap.

W. H. NICHOLSON & CO. 181 OREGON STREET
WILKES-BARRE, PA.
Sales and Engineering Offices in 53 Principal Cities

When inquiring check CP 5301 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Hands are production tools

2 of many types, functionally designed for working hands:



Multi-ply coating of NEOX—reinforced neoprene, extremely resistant to cutting, abrasion and chemicals. Fabric lining prevents snags, absorbs sweat, insulates, makes gloves easy on and off. Firm non-slip grip.



Natural rubber treaded palm and thumb. Has firm grip, wet or dry; wears like a tire.

We have the case records of hundreds of on-the-job tests, handling sharp, abrasive and slippery materials, with and without the presence of heat, oils, greases, acids, caustics, solvents and degreasants—where proper selection of work gloves has resulted in:

- 1: Fewer lost-time accidents
- 2: Faster, surer work handling
- 3: Less spoilage
- 4: Improved job attitude
- 5: And 40% to 70% savings in usual glove costs.

There's a correct glove for every job. Smart management makes it available.

Edmont

Manufacturing Company
501 Orange Street, Coshocton, Ohio

World's largest maker of coated industrial gloves

When inquiring check CP 5302 on handy form, pgs. 2-3

Hundreds of firms like yours

CANDY	JAMS	MILK	RUBBER
CERAMICS	JELLIES	OILS	SPACE
CHEMICALS	KILNS	PAPER	HEATING
CORRUGATORS	LAUNDRIES	PLASTICS	TOBACCO
GRAIN DRYING	LINOLEUM	PLYWOOD	VEGETABLES
	MEATS	ROOFING	WALLBOARD

increase production · save fuel

CANDY: Cooks batches faster	PAPER: Faster operating speeds
MEAT: Shortened processing time	MILK: 16% less fuel cost
PRESERVES: Controlled steam	RUBBER: 20% fuel saving
CANNER: 20% fuel saving	LAUNDRY: Speed increased 12%
CHEMICALS: Speed increased 44%	MEAT: More steam—less fuel

improve quality · save labor

with

COCHRANE



SYSTEM

of Condensate Drainage Control

Why not you?

write for 24-page fully illustrated bulletin

COCHRANE CORP.
3162 N. 17th St., Phila. 32, Pa.

When inquiring check CP 5303 on handy form, pgs. 2-3

JUNE, 1951

PROCESSING EQUIPMENT

Air space between cover lenses prevents fogging; plastic does not pit or scratch . . .

protect more costly filter lenses; plastic resists impact and does not crack

Uses: Developed to protect more costly filter lenses from hot metal spatter and scratches. Reduces fogging.

Features: Plastic lens remains pit free during long periods of service, and resists fusion of hot metals and spatter. Shock-absorbing acetate cushions upon impact and does not crack.

Description: Lens is formed so that center portion is raised. Air space, created between two lenses, automatically reduces fogging to a minimum. Use of fiber washers is unnecessary with this construction.

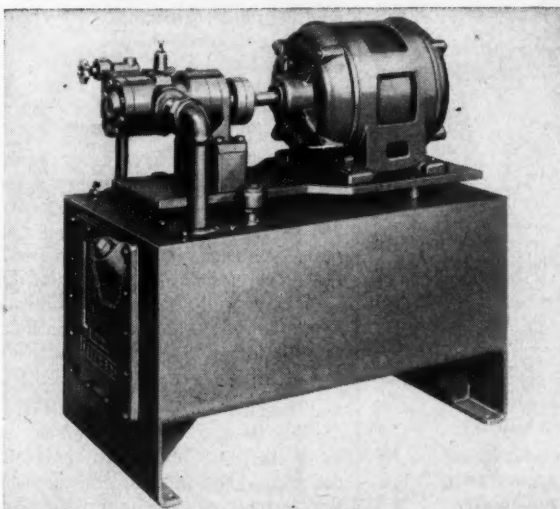
Source: Plastic cover lenses are made by American Optical Company, Safety Products Division, Dept. CP, Southbridge, Mass. . . . or for more information check CP 5304 on handy form, pages 2 and 3.

Develops up to 2000 psi hydraulic pressure for power applications . . .

units conform in detail with pertinent J.I.C. specs.

Uses: Single, double and two-pressure pumps develop 1,000 psi hydraulic pressure; two-stage pumps, 2,000 psi hydraulic pressure.

Features: Completely sealed tank with breather air cleaner and separate filler hole having removable mesh screen and chain attached cap . . . elevated tank body with dished bottom, drain plug and cleanout holes at both ends



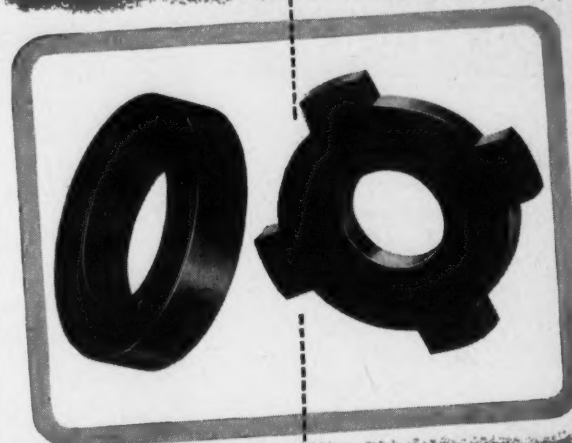
Hydraulic power unit with sealed tank

to permit drainage without spillage and complete cleaning of tank . . . flush type oil indicator with high and low oil positions marked. Motor mounting plate is separate from tank for convenience in mounting units.

Description: Available in three series: T20, T30 and T60, and 10 models for electric motors from 3/4 to 25 hp. Units are constructed in accordance with recommended JIC hydraulic standards for industrial equipment.

Source: Vickers Inc., Dept. CP, 1582 Oakman Blvd., Detroit 32, Mich. . . . or for more information check CP 5305 on handy form, pages 2 and 3.

Everyone **IMPERVIOUS**
to hot corrosive liquids



MORGANITE
SELF-LUBRICATING
SEAL NOSES

— for high temperature, high pressure
operation on all rotary equipment

Here's the seal element you can depend on for long, trouble-free service in the presence of high temperatures, corrosive chemicals, oil, water and other fluids. Morganite provides a self-lubricating, leaktight running seal recommended for handling foodstuffs, beverages, paraffin, hot water and other liquids. Typical applications include food mixers, washing machines, food and enameling oven conveyors, fuel pumps, and water circulating pumps for automotive, marine and aircraft engines.

NON-CONTAMINATING . . . they impart no taste or odor

CHECK UP NOW on Morganite self-lubricating, self-lapping and polishing carbon parts. Cut maintenance and production interruptions, increase the service life of your products with Morganite bearings, vanes, rings, seal elements and special parts. See our illustrated catalog in Sweet's File for Product Designers or write for complete engineering data.



Morganite
INCORPORATED

LONG ISLAND CITY 1, NEW YORK
Manufacturers of CARBON MOTOR and GENERATOR BRUSHES,
CARBON PILES and SELF-LUBRICATING CARBON SPECIALTIES

When inquiring check CP 5306 on handy form, pgs. 2-3

LOW COST
is only *half* the story
...the *Star*
FILTER PRESS
alone offers all these
practical money-saving
FEATURES

PROVEN by WIDE USE
in filtering:

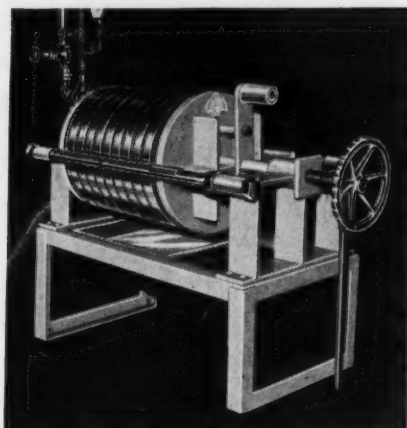
Dyestuffs • Paints
Food products
Oils • Fats • Brine
Pharmaceuticals
Acids and Alkalies
All liquids &
Semi-liquids

Star TANK AND FILTER CORPORATION
LEADING MANUFACTURER OF PROCESSING EQUIPMENT SINCE 1904

875 EDGEWATER ROAD ★ NEW YORK 59, N. Y.

Manufacturers of Stainless Steel Tanks for Storage and Mixing. All sizes. All shapes.
When inquiring check CP 5307 on handy form, pgs. 2-3

- ★ MORE FILTER AREA per dollar of initial cost.
- ★ EASIER MAINTENANCE.
- ★ NO GASKETS — means no contamination and minimum leakage.
- ★ ANY THICKNESS sludge and cake frames.
- ★ FROM 12" TO 56" diameter and square.
- ★ MADE IN ALL THE STAINLESS STEELS and also monel, Hastelloy, Aluminum, Mild Steel, etc.



with **OCECO "Type B"**
VENT UNITS



● Combined flame arrestor and conservation vent valve. These units protect both the tank and tank contents from entrance of flame; control and restrict tank breathing and prevent the free escape of vaporized liquids and lowering of gravity ratings. Sturdy, dependable, efficient and trouble-free Oceco construction. 2" to 10" sizes. Write for Catalog 474-R. It gives full details.

OCECO TANK FITTINGS

THE JOHNSTON & JENNINGS CO.

division of PETTIBONE MULLIKEN CORP.

4751 West Division St.

Chicago 51, Illinois

When inquiring check CP 5308 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Make anodizing baskets of Bakelite . . .

designed for use in sulfuric acid solutions

Uses: For use in production anodizing of rivets and other small parts.

Features: Designed for use in sulfuric acid solutions, basket is made of Bakelite with an aluminum center stem. Cover is equipped with a compression spring for maintaining positive contact pressure essential to uniform anodizing results.

Description: In use, parts are dumped into the basket and "shook down". Then the cover is pinned down under compression by means of pin through stem.

Basket illustrated is 12½" high by 5¾" ID. Other sizes furnished to specification.

Source: Belke Mfg. Co., Dept. CP, 947 N. Cicero Ave., Chicago 51, Ill. . . . or for more information check CP 5309 on handy form, pages 2 & 3.



Bakelite anodizing basket

Dust cups on punches of tableting machines catch oil . . .

also keep dust from puffing up at point of compression

Uses: Attached to each upper punch of rotary tableting machine, cups catch running oil or grease on punch shank and keep it from falling into granulation. Also prevent dust from puffing up from point of compression and gathering on lower shank or keyway where it would dry the lubricant on the shank.

Features: Maintenance is reduced and lubrication is required less frequently because lubricant can be used more freely. Cleaning of the cups is required only once or twice weekly. Replacement of cups is unnecessary as neoprene is not affected adversely by oil or grease.

Description: In installation of neoprene dust cups, holes are punched in the centers of the cups by placing them over a die and rotating the machine by hand.

Source: Dust cups are available from F. J. Stokes Machine Co., Dept. CP, Philadelphia 20, Pa. . . . or for more information check CP 5310 on handy form, pages 2 and 3.

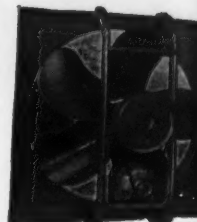
25 TYPES . . . OVER 150 SIZES!

CHELSEA FANS



— for every requirement!
Specifying Chelsea Fans for every installation is one sure way to proper ventilation. There's a Chelsea model for every requirement, each type certified as to performance in accordance with the Standard Code of P.F.M.A.

Chelsea Industrial Type IND
For large general area ventilation. Moves large volumes of air under pressure. Scientifically designed blades overcome high resistance in hoods and ducts. Sizes from 24" to 60".



Chelsea Comfort Cooler Type E
Designed for attics of laundries, this Chelsea package unit is complete with automatic ceiling louver, brackets and springs, canvas boot, etc. Quiet in operation, economical to install. Sizes 24" to 48".

All-Purpose Fan Type BB
For removing smoke, steam, heat, fumes, etc. Heavy duty, direct drive fan for continuous operation. Simple to install. Sizes from 10" to 30".

SEND FOR FREE CONTRACTOR'S KIT!

Contains all the information you need to make ventilating and cooling installations in factory, store, office or home — selection of proper fan, installation hints, etc. No obligation — write Department J.

CHELSEA FAN & BLOWER CO.
INCORPORATED
PLAINFIELD, NEW JERSEY



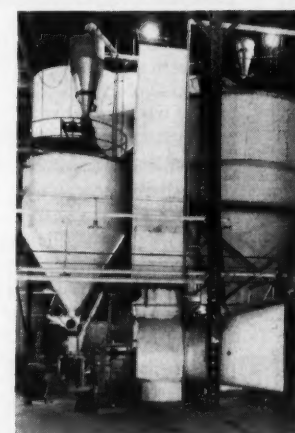
When inquiring check CP 5311 on handy form, pgs. 2-3

SPRAY DRY HEAVY CHEMICALS

at Low Cost

This high-capacity equipment is especially suitable for handling heavy chemicals. It is direct fired with oil or gas, and gives amazingly low-cost operation.

Typical uses: silica gel, kaolin clay, manganese sulfate, calcium carbonate, chrome sulfate, sodium phosphates.



Swenson Spray Dryers successfully handle a wide variety of organic and inorganic chemicals.

Send for Bulletin D-105

SWENSON EVAPORATOR CO.

Division of Whiting Corporation

15667 Lathrop Ave.

Harvey, Illinois

When inquiring check CP 5312 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Ideas into Salable Products

(Continued from page 4)

and new ideas in general are most likely to be disclosed during a salesman's first call on a new prospect.

Reports, suggestions and ideas from the field are abstracted and coordinated by Technical Service, and passed along to men at work on the project.

The project has by now become an item on the "Project Status Report" prepared by the Research and Development Division and sent to the Marketing Division. As the name implies, this report presents a brief picture of where each project of the company stands. It is issued the first of each month to the complete list of executives, sales managers and field service engineers. With this method, every interested party can trace a project through its development steps, and will be ready for it when actual selling commences.

A "Summary of Technical Service Requests to The Research and Development Division" is a sort of cross-check on the Project Status Report. Much briefer than the Report, the Summary consists of a list of projects, the questions "what has happened to this project" and "what is going to happen to it," and the answers. It is issued by the Technical Service Division in the middle of every month.

A "Project Summary Sheet" is clipped to the Summary of Technical Service Requests. This is a very brief running inventory of time available in the Research and Development Department, and the time expected to be required for various projects. It also shows the original estimate of time required for any project, and the amount of time actually expended. This tells all people how many projects can be admitted to the shop, and sharpens estimates of how much time a project ought to need.

In addition, there is a monthly report on research. In brief one-line statements it shows requests for Research and Development, and the status of all projects at a quick glance.

Monthly or bi-monthly committee meetings, at fairly regular intervals, are a means of discussing some of the projects and of bringing out some facts and ideas that have not been put on paper. A full but brief report of the meeting is disseminated.

The report goes to product development. It suggests new variants of standard products, new production methods, etc. Some ideas are recommended as projects for Research and Development.

Convention & Exhibit Schedule

June 14-15. Manufacturing Chemists' Association, Inc., 79th Annual Meeting, Greenbrier Hotel, White Sulphur Springs, West Virginia.

June 18-20. SPI Pacific Coast Chapter Conference, The Society of the Plastics Industry, Tahoe Tavern, Lake Tahoe, California.

Sept. 3-7 American Chemical Society, Diamond Jubilee Meeting, 120th National Meeting, New York.

Sept. 10-14. Instrument Society of America, Sixth National Instrument Conference and Exhibit, Sam Houston Coliseum, Houston.

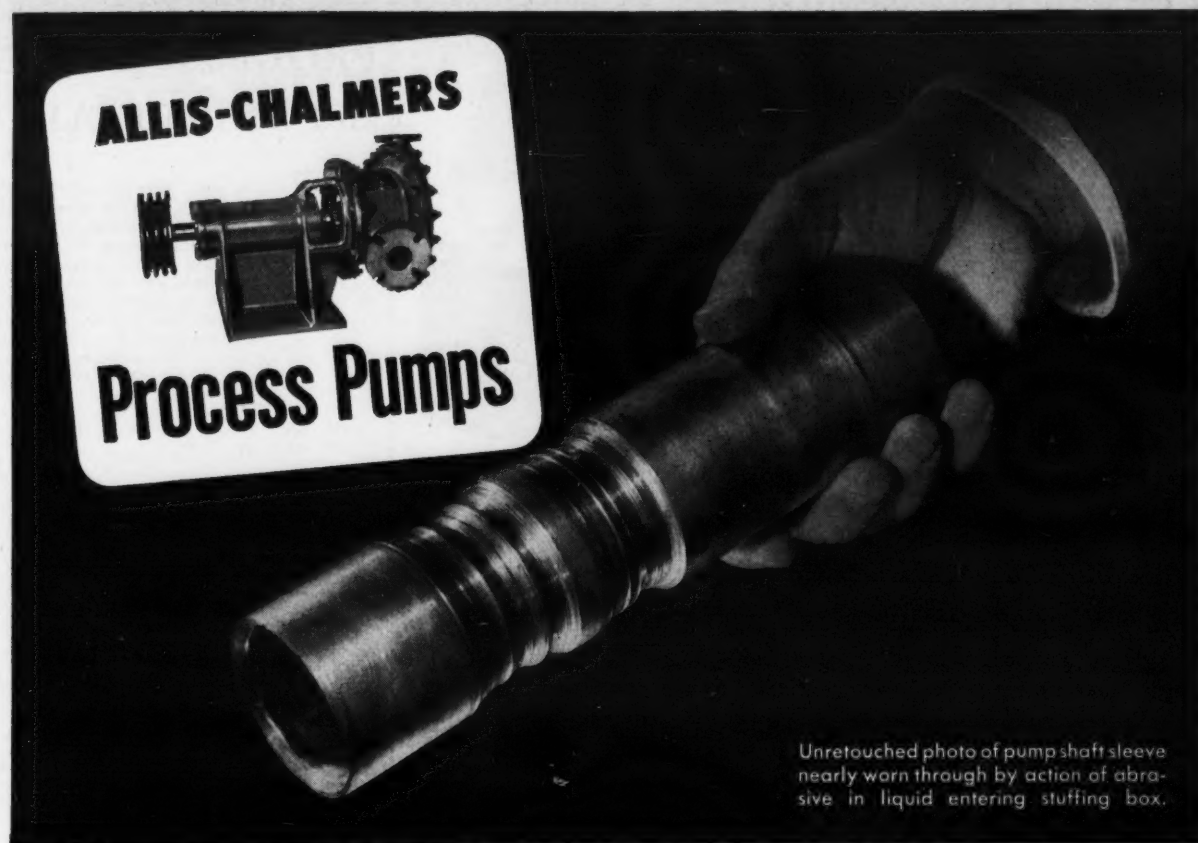
Sept. 16-19. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.

Sept. 17-19. American Institute of Chemical Engineers, Regional Meeting, Sheraton Hotel, Rochester, N. Y.

JUNE, 1951

ALLIS-CHALMERS

Process Pumps



Unretouched photo of pump shaft sleeve nearly worn through by action of abrasive in liquid entering stuffing box.

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ALLIS-CHALMERS

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Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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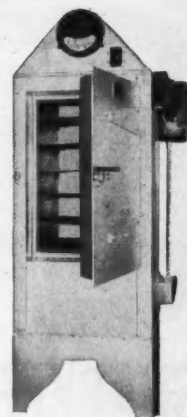
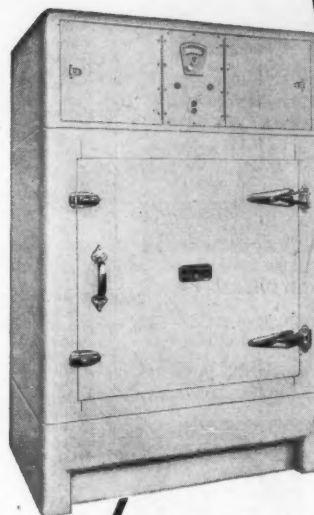
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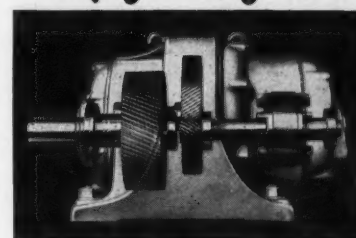
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with
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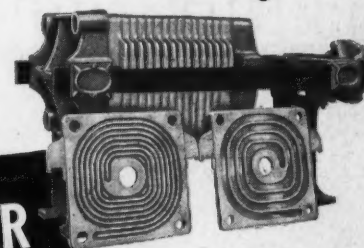
Saves space. Avoids purchase of extra equipment. Pyramidal structure insures maximum stability. Asbestos-protected windings. Hardened gears. 1/4 to 30 h.p. Write for 16-page Syncrogear Bulletin.

U.S. ELECTRICAL MOTORS Inc.
Box 2058, Los Angeles 54, Cal. or Milford, Conn.



When inquiring check CP 5324 on handy form, pgs. 2-3

When It Settles Slowly
and You
Have to
Wash It



try the
SHRIVER
Continuous
THICKENER

- for
- Slow settling solids requiring washing.
 - Reducing slurry to required degree of thickness.

A modification of the filter press, the Shriver Thickener is designed so that filter cake is not built up in the chambers, but the slurry is swept out in a continuous stream while it is being progressively thickened by the filtering action of the equipment. As a replacement for washing or thickening of many products by settling or decantation, this Thickener can reduce processing time as much as 90 per cent. Investigate—write for Bulletin 122.

T. SHRIVER & COMPANY, Inc.
846 Hamilton St. Harrison, N. J.

When inquiring check CP 5325 on handy form, pgs. 2-3

FOR LOWER STORAGE COSTS



SPECIFY *Kalamazoo* GLAZED TILE

You practically eliminate maintenance problems and costs when you store bulk materials such as coal, gravel, and sand in tanks and silos made of Kalamazoo Glazed Tile. Far superior to concrete — easy to clean — cannot contaminate contents. For a permanent low-cost installation, specify Kalamazoo Glazed Tile.

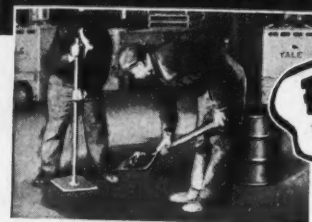
WRITE FOR COMPLETE FACTS

Kalamazoo TANK AND SILO COMPANY

632 Harrison Street • Kalamazoo, Michigan

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Heavy Duty Plastic Makes SOLID FLOOR PATCH INSTANTLY...No Wait for Setting!



**FREE
TRIAL OFFER**

**Tamp Smooth!
Truck Over!**

Use durable INSTANT-USE . . . a tough plastic material which you simply shovel into hole—tamp—and run traffic over immediately. Tough INSTANT-USE is ideal for repairing cracks and breaks due to relocating machines . . . or for complete overlays. NOTE: Plasticizer makes INSTANT-USE easy to scoop out of container . . . easy to level, to tamp, to use! There's a Flexrock material for every floor condition—oil, acid, wet, dry! Tell us your problem!

MAIL COUPON for FREE TRIAL OFFER and
HAND BOOK OF BUILDING MAINTENANCE

INSTANT-USE

FLEXROCK COMPANY (Offices in principal cities)
3611 Filbert St., Philadelphia 4, Pa.

Please send me complete INSTANT-USE information, details of TRIAL ORDER PLAN and HAND BOOK OF BUILDING MAINTENANCE—no obligation. (Clip and attach Coupon to Co. letterhead).

Name
Company
Address



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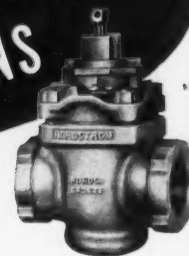
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A Special Valve for

**STRONG, HOT
ALKALINE
SOLUTIONS**



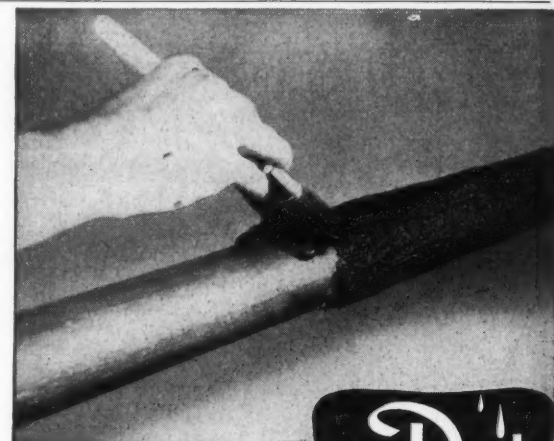
Made of Mercoloy — a special grade of nickel bronze. Highly resistant to alkaline solutions; also many concentrations of sulphuric acid. Free from galling. Automatically lubricated. Ask for prices.

Fig 814—1/2" to 8"
300-lb and 200 lb.

ROCKWELL MANUFACTURING COMPANY
400 N. Lexington Ave., Pittsburgh 8, Pa.

NORDSTROM
MERCOLOY VALVES

When inquiring check CP 5328 on handy form, pgs. 2-3



COVERS PIPES TANKS, WALLS

NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. **STOPS CONDENSATION DRIP!**



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NoDRIP

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook
J. W. MORTELL CO., 530 Burch St., Kankakee, Ill.

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CHEMICAL PROCESSING

"That's Interesting"

Pack it in popcorn? FDA says no!

Exceptional properties of popcorn as a packaging material have been substantially demonstrated. Lightweight, resilient, clean, it costs no more than shredded paper. Fragile articles such as vials and small bottles are typical of articles that are effectively protected in shipment. In addition to superior capacity for protecting shipping carton contents, it offers savings in lower postage costs.

However, Food & Drug Administration of the Department of Agriculture is opposed to this use of popcorn because of the likelihood that it would be eaten after it had been used for packing. Post Office is being urged not to approve material on grounds of danger to the public.

More Informative labeling for plastic products

Use of informative labeling by plastic manufacturers is telling consumer purchasers how the product is made, what it will do, and how to take care of it. More than 50% of the plastic products being marketed today carry labels of some sort. While about only 10% of labels now classify as actually informative, a labeling program now under way is expected to increase use of labels and also make their context of greater practical value. This activity was begun about two years ago by the Society of the Plastics Industry. Six points of importance in designing such labels are: (1) product name; (2) what it will do; (3) what is it made of; (4) how is it made; (5) limitations and how to take care of it; and (6) guarantee — if any. Handbooks have been issued by the Society to further this program with plastic manufacturers.

Not impolite to point — if you have one of these

A light-projecting baton has been designed primarily for pointing out centers of interests on slides and film strips. Projecting a small and very bright spot on the screen, it weighs but 8 oz and is fabricated of aluminum tube and round rod. It uses ordinary battery cells. Made by Algonkin Co., 7 West Church St., Mansfield, Mass. (Alcoa Aluminum News Letter, Pittsburgh 19, Pa.)

Supplying baby is getting to be big business

Demand for baby toiletries is expanding to unforeseen levels, making this field a highly important one to many manufacturers and retail outlets, particularly drug stores. Baby powder sales alone last year exceeded \$10,000,000, with baby oil \$7,000,000. Potential sales for baby toiletries and supplies should run over \$4,000 per drug store.

For more information on product at right, specify CP 5330 . . . see information request blank between pages 2-3.

For Infinitely Greater Production Possibilities

PORTABLE MIXERS

Precision Built—Direct
Drive Hi-Speed, or
Gearmotor Slo-Speed.
Electric or Air-Motor
Types—Any Size, with
Completely Sealed,
Pre-lubricated
Ball Bearings.

International Complete Processing Systems

To the Chemical and allied Industries, INTERNATIONAL ENGINEERING offers the most complete line of Modern PROCESSING EQUIPMENT ever presented—with a completely INTEGRATED and perfectly BALANCED SYSTEM of operation, for the highest efficiency and lowest costs.

When you're making improvements, building a new plant, or expanding your present facilities, be sure to check with INTERNATIONAL for the latest Engineering Developments in improved EQUIPMENT for the correct and most economical BLENDING, TREATING, MIXING and GRINDING of Chemical components.

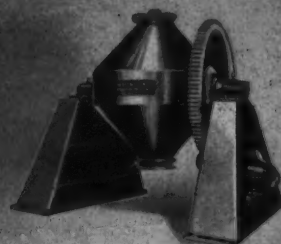
REMEMBER—INTERNATIONAL manufactures and Guarantees the Equipment you need, in any required sizes and capacities . . . Write today for Special Catalogs on any product. No obligation.

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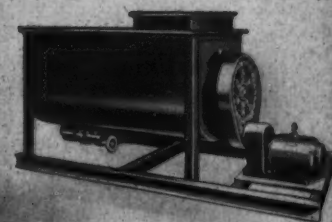
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CHICAGO—407 S. Dearborn

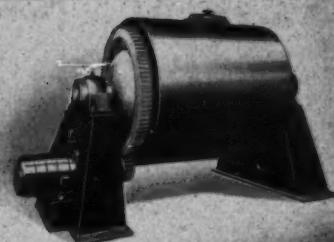
DISTRICT REPRESENTATIVES IN PRINCIPAL CITIES



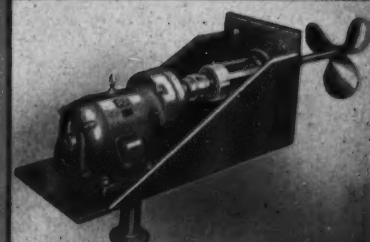
DRY BLENDERS
From 25 to 10,000 lbs.



RIBBON MIXERS
From 1/4 to 175 cu. ft.



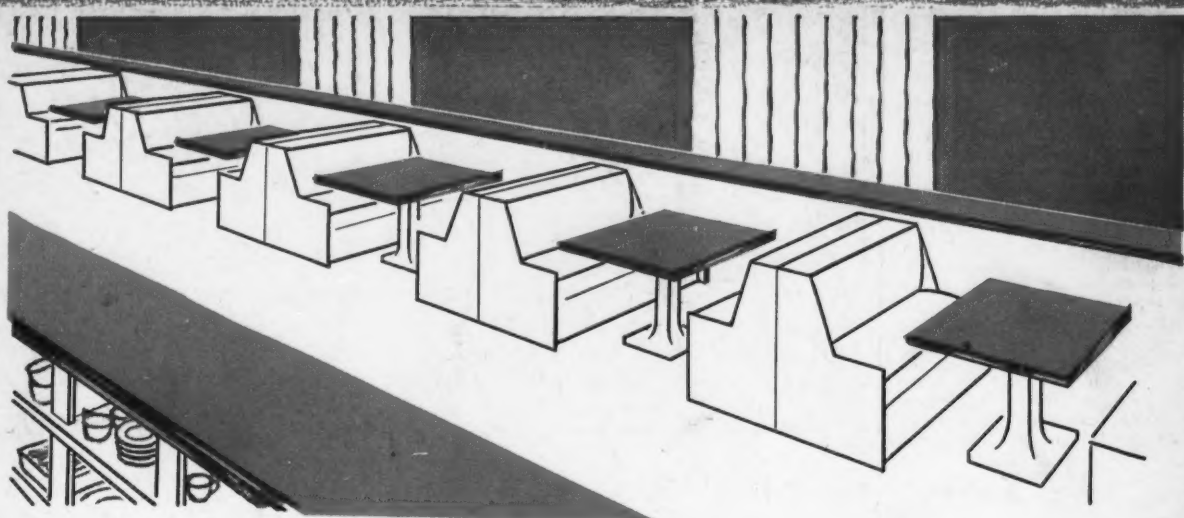
BALL MILLS
Welded Steel Construction



SIDE ENTERING MIXERS
1/2 to 30 H.P.

Top Entering
AGITATORS

CHEMICAL PROCESSING



processing decorative laminates?

No. 324 **PLYOPHEN**

steps up the PACE and PROFIT

Here is an alcohol soluble phenolic resin which is daily demonstrating its ability to produce higher quality decorative laminates—faster! Quality improves because No. 324 has the same flow characteristics as the resins commonly used in applying the decorative surface sheet, thereby assuring an attractive product free of any appearance-marring defects. Then too, speed of production increases

because No. 324 reduces treating machine time by as much as 50-75%. Add to this No. 324's excellent storage stability and phenomenal treating machine yields, and you have further evidence of how this top quality resin can increase your production and profits! Further information together with a working sample may be obtained by writing direct to the RCI Sales Department at Detroit.

REICHOLD CHEMICALS, INC.

General Offices and Main Plant, Detroit 20, Michigan



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SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • PHENOL • GLYCERINE
PHTHALIC ANHYDRIDE • MALEIC ANHYDRIDE • SODIUM SULFATE • SODIUM SULFITE

For more information on product advertised at right, specify CP 5331 . . . see information request blank between pages 2-3.

